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VOL. II.—9TH YEAR. SYDNEY: SATURDAY, DECEMBER 16, 1922. No. 25.

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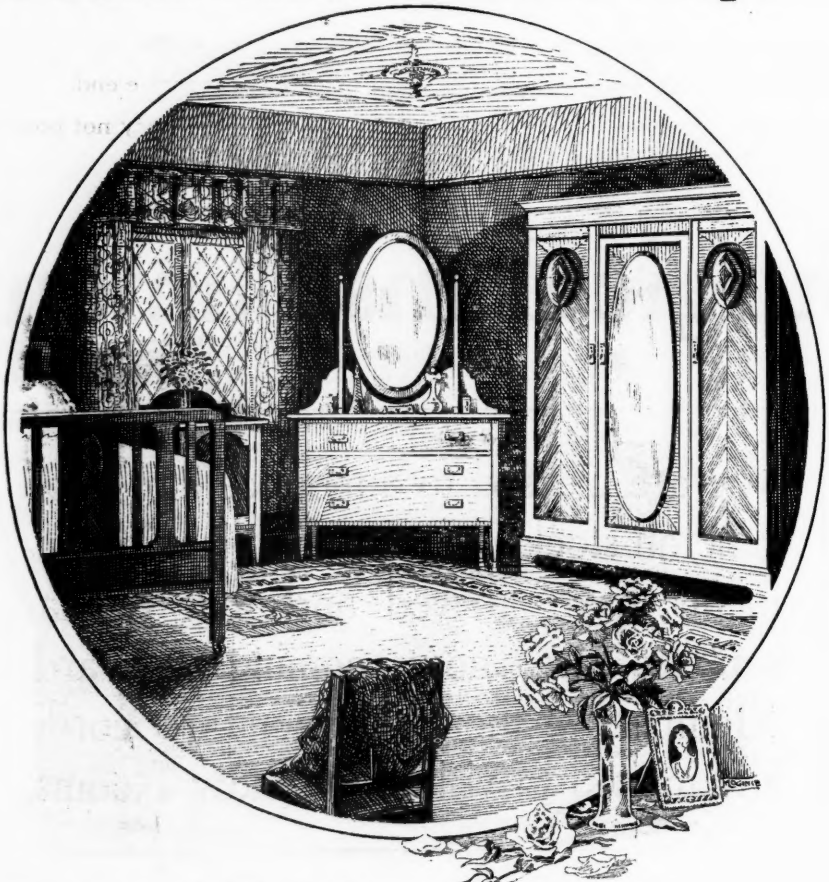

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BASAL METABOLIC RATES IN GRAVES'S DISEASE.[1]

BY R. L. THOROLD GRANT, M.B., B.S. (ADELAIDE), M.R.C.P. (LONDON),

Adelaide.

THE following study in basal metabolic rates was undertaken during the year 1921 in the wards of the Medical and Surgical Professorial Units at Saint Bartholomew's Hospital, Smithfield, London. These units work together as much as possible and during the year 1921 a special study of diseases of the thyreoid gland was undertaken. In order that this work might be complete, it was necessary that the basal metabolism of the patients be estimated and for this purpose an apparatus of the type designed by Benedict was purchased from Sanborn's, in London.

I was entrusted with the duty of making these metabolism observations and in the following pages I will give an outline of the method of use of the machine and the results obtained by its use, together with a short account of the patients and the conclusions drawn from this work.

The basal metabolic rate may be defined as the numerical expression of the heat produced by an individual per unit of time and per unit of body surface when that individual is at complete rest and in the post-absorptive condition.

For general standard of comparison this rate is expressed in calories per hour per square metre of body surface.

DIRECT CALORIMETRY.

In the study of calorimetry two methods are open to choice. These are known as the direct and indirect methods. In the direct method the patient is enclosed in a specially constructed respiration calorimeter and a direct measurement of the heat production is thus obtained.

In 1897 Atwater published a description of a calorimeter by means of which the heat production in man could be measured; in the completion of this apparatus he was assisted by Rosa. The original Atwater-Rosa calorimeter was combined with a respiration apparatus of the type designed by Pettenkofer, which measured only the carbon dioxide excretion without determining the oxygen intake.

This apparatus for direct calorimetry has been elaborated by Benedict, Williams and others and it has been adapted for use in certain American hospitals.[1]

For ordinary clinical purposes, however, this calorimeter is too elaborate and too expensive.

Benedict writes:[2] "Heat is the end product of all vital transformations, so that theoretically the latter can best be measured by some method of deter-

[1] Read at a meeting of the South Australian Branch of the British Medical Association on August 31, 1922.

mining directly the heat given off from the body. Such a method calls for an elaborate calorimeter and for this to be of sufficient size to measure directly the heat production of the body, so that a large and costly apparatus is required."

INDIRECT CALORIMETRY.

In the indirect method of calorimetry one reliable way of making the calculation is by means of the Douglas bag, but this entails the labour of gas analysis, as the result is arrived at by an analysis of the expired gas contained in the bag and more time is thus necessary.

By reason of its simplicity Benedict's apparatus for indirect calorimetry was chosen.[3] This machine is easily conveyed from one ward of a hospital to another; moreover, the necessary calculations can be made from the oxygen intake of the patient, so that gas analysis is not necessary.

The Benedict Apparatus.

The following is an outline of the method employed in using the Benedict apparatus:

As the patient was in nearly every case extremely nervous, it was first necessary to spend a little time explaining the use of the machine to her, allowing her to see it and, if possible, letting her witness it in operation.

In some cases a great deal of tact was necessary, for the machine has a somewhat alarming appearance and on this account we were occasionally obliged to acknowledge defeat, for it is impossible to make an estimation when the patient is so nervous that she moves about in bed, thus increasing her heat production.

All the readings were carried out between the hours of ten and twelve in the mornings. The patient had no food after seven o'clock of the evening before, but was allowed occasional sips of water. She was kept in bed and was requested to remain as still as possible for the half hour prior to the experiment.

All the patients were in a general ward, which is a slight disadvantage, but as much privacy as possible was obtained by placing screens round the bed. The sister in charge of the ward had instructions that nobody but the operator was to be allowed behind the screen; she also saw that the course of the experiment was not interrupted in any way.

The hospital wards were kept at an equable temperature throughout the year and the patients were in an afebrile condition when readings were taken. This is important, for E. F. Du Bois writes:[4] "We can say that it is possible to estimate the basal metabolism of a patient by calculating his normal according to surface area standards. To this we should add about 13% for each degree centigrade above the normal temperature (7.2% for each degree Fahrenheit)."

The spirometer bell of the machine was filled, one-third of its volume being taken up with air and the remaining two-thirds with oxygen. This was done at a distance from the patient's bed, as the sudden escape of oxygen from a cylinder sometimes occurred and this was liable to produce considerable nervous reaction, so that a delay would be necessary to allow the patient to become quiet again.

The machine being filled, it was wheeled alongside the patient's bed and placed in position. The electric motor was started and a watch kept on the indicator to see that the gaseous mixture was not escaping. The temperature of the gas in the spirometer bell was then noted; the motor was then adjusted so as to keep the fan running at the correct speed. The patient was then given a final word of advice; she was told that the experiment entailed no discomfort at all and that if the slightest sense of suffocation was felt, a sign was to be made to the operator, when the mouthpiece would be immediately removed. If all was well, she was to keep perfectly still, moving not even a finger.

The mouthpiece was then moistened and inserted and the nose clipped with a specially constructed screw, so that all the breathing took place through the mouth.

After the patient had breathed atmospheric air for about half a minute, the three-way valve was turned and the patient immediately commenced breathing the mixture of air and oxygen contained in the spirometer bell, a warning being given that the first few respirations would feel cold.

The spirometer bell would immediately commence moving up and down with each expiration and inspiration respectively, gradually sinking as the carbon dioxide expired was absorbed in the soda-lime bottle.

As soon as the respirations had become regular a reading was taken on the scale; this reading was taken at the end of an expiration. At the same moment the stop watch was started.

Readings of the oxygen consumed were taken at the end of every two minutes. This was done in order to see that the rate and depth of respiration kept even. If the figures for the two-minute periods differed considerably, they were discarded and a fresh start was made. At the end of ten minutes a final reading was taken, the watch being stopped and the reading taken at the end of an expiration. This was the usual length of time occupied, but in some cases a shorter period was sufficient, for the rate and depth of respiration might be so uniform that six minutes would suffice for the experiment.

The temperature of the air-oxygen mixture was again noted and from the two readings the average temperature during the experiment was obtained. Thus it was known how many cubic centimetres of oxygen were consumed by the patient in a given time. For the calculation of the basal metabolic rate it was necessary to know the height and weight of the patient. By using the body surface chart of Du Bois[5] the surface area in square metres can be calculated when the height and weight are known. It was then possible to estimate the number of cubic centimetres of oxygen consumed per minute per square metre of body surface.

Next it was necessary to obtain a reading of the barometer and this oxygen volume was reduced to 0° centigrade and 760 millimetres of mercury pressure. The unit of basal metabolic rate which is generally accepted for comparison, is expressed in

calories per hour per square metre of body surface, but in order to follow the clinical progress of a patient it was not necessary to calculate in calories.

Aub and Du Bois have published tables of oxygen consumption per minute per square metre of body surface, these figures being taken from experiments carried out on apparently normal individuals. The tables are divided into age periods and separate figures are given for the sexes.

On comparing the figure obtained in the experiment with that of the average normal person of the same age and sex in these tables, it was seen whether the oxygen consumption obtained was above or below normal and the result was expressed as a percentage. As a rough check on the machine I determined the oxygen consumption of two hospital patients both suffering from illness which would not raise or lower their metabolism. Both were men; one was a tabetic and the other suffered from gonorrhœal arthritis. In each case the result obtained was sufficiently close to the standard results of the table for them to be classed as normal.

Dr. Graham, of Saint Bartholomew's Hospital, also carried out a reading on me. I had no breakfast on the day and I lay on a couch without moving for half an hour before the reading was taken. The result obtained was within a few cubic centimetres of the average normal consumption.

Sources of Error.

The most fruitful source of error was to be found in the extreme nervousness of the patients, who were all women and most of whom suffered from a severe form of Graves's disease.

For this reason the first experiment generally produced an unreliable result, but, as the patient became accustomed to the machine and understood that no harm accrued from its use, the nervousness factor could be eliminated.

It was always important to test the machine for leakage. This was best done by placing a weight (115 grammes) on top of the spirometer bell when the latter had been filled and the valves had been closed; the indicator was watched to see if any gas escaped over a period of, say, fifteen minutes.

Another important point was to be found in seeing that the soda-lime was fresh and hence in a condition to absorb the carbon dioxide readily. A rough guide was obtained in watching the colour of the soda-lime, for it acquired a brownish-yellow appearance as it became exhausted. A simple test was to blow expired air through the soda-lime bottle and see whether the escaping gas rendered lime-water cloudy.

Friction had to be obviated as much as possible and all parts were kept thoroughly oiled.

It was important to see that the moat surrounding the spirometer bell was kept well filled with water and also that none of this water worked its way inside the bell and so into the connecting pipes. This happened on one occasion, but was noticed by the patient, who drew attention to the "bubbling."

Account of Cases Investigated.

I. J.J., aged fifty-two years, was admitted to Saint Bartholomew's Hospital under Professor Fraser on January 18, 1921. She complained that her heart beat so quickly that it sometimes awakened her at night by its "banging."

She was in good health till November, 1918. Just after the armistice she noticed that she was shaking. On consulting a doctor she was informed that she had a goître. She had not noticed any swelling in her neck till then. She thought that the swelling had gradually lessened in size since. She had always had prominent eyes and thought this condition was natural until her attention was drawn to it. She was always nervous, but was much more so since her illness commenced. She had been in bed for the last year, during the latter six months of which she had become worse. There had been loss of weight, but the amount was not known. Her daughter suffered from the same complaint.

Condition on Admission.

The patient was a middle-aged, thin woman. She was very nervous and could not keep her hands still. Her pulse rate varied between 100 and 120. There was marked exophthalmos. Von Graefe's, Moebius's and Joffroy's signs were all present. There was moderate enlargement of the thyreoid gland and a bruit was heard over the gland. There was a fine, rapid tremor of the extended fingers. The skin was moist.

The heart was hypertrophied. The apex beat was in the sixth space, sixteen centimetres (six and a quarter inches) from the mid-line. A systolic bruit was heard over the pulmonary area and down the left border of the sternum.

Clinical Course.

On January 20 she was given a mixture containing potassium bromide and arsenic.

On February 1 her basal metabolic rate was + 25%.

On February 8 her basal metabolic rate was + 66%. The hospital dentist reported that her teeth were in a severe septic condition. The tonsils were also in a septic state.

On February 14 the basal metabolic rate was + 14%.

On February 19 the basal metabolic rate was + 60%. The arsenic mixture was discontinued and the patient was given a fat-free diet.

On March 1 the basal metabolic rate was + 49%.

On March 2 she was given ordinary diet. Tincture of iodine (French Pharmacopœia Codex) was prescribed in three doses of 0.5 mil each day.

On March 7 the dose of the tincture of iodine was increased to one mil.

On March 9 the basal metabolic rate was + 16%.

On March 10 she was given tincture of iodine in doses of two mils three times a day.

On March 15 the basal metabolic rate was + 15%. The dose of tincture of iodine was further increased to 3.5 mils.

On March 22 her basal metabolic rate was + 34%.

On April 1 she had several septic teeth extracted.

On April 5 her basal metabolic rate was + 16%.

On April 7 a gain in weight of 0.9 kilogram in each of the last two weeks was recorded. Her pulse rate remained about 100. She felt better.

On April 12 she was given tincture of iodine in doses of 5.3 mils.

On April 30 the iodine administration was stopped.

On May 7 the iodine was resumed in doses of 0.6 mil.

On May 24 the doses of the tincture of iodine was increased to 2.9 mils.

On May 30 the patient was transferred to a surgical ward under the care of Mr. T. P. Dunhill.

On June 7 she had a sudden rise of temperature to 38.3° C., associated with an attack of acute abdominal pain.

On June 8 the condition was diagnosed as acute appendicitis. At operation the appendix was found to be perforated and a large amount of pus was evacuated.

On June 21 a further operation was undertaken and more pus was evacuated from the septic abdominal wound.

On July 2 her basal metabolic rate was + 69%. Her pulse rate was 112 to 120.

On July 10 the right lobe of the thyreoid gland and part of the isthmus were removed.

On July 17 her basal metabolic rate was + 81%.

On July 22 the patient was sent away for a holiday.

On November 3 she was re-admitted.

On November 7 her basal metabolic rate was + 20%.

On November 10 the further removal of portion of remaining thyreoid gland was carried out.
On November 22 her basal metabolic rate was + 8%.

Histological Report.

"The section shows vesicles of normal size containing colloid and lined by cubical or columnar cells. Some vesicles are filled with desquamated cells; others show irregular cell proliferation, the cells filling the lumen, which contains no colloid, in irregular masses. There is a general increase in fibrous tissue."

This patient was of great interest because she was under observation almost continually for nearly a year. During that period her health varied considerably, which variation has an index in the fluctuations of the basal metabolic rate. When last seen the patient was in good health, with a basal metabolic rate sufficiently low to be classed as normal.

II. I.H., aged twenty years, was admitted to Saint Bartholomew's Hospital under the care of Professor Fraser on April 1, 1921, complaining of "swelling in the neck."

A year ago she had a sore throat and a slight visible external swelling. Nine months ago she was told she had a goitre. The neck was painted with iodine and she took thyreoid extract. There was no improvement in her condition. She had lost nearly sixteen kilograms in weight in a year. She was feeling weak and had done no work for seven months. She suffered from palpitations over her heart and neck. Her eyes had been noticed to protrude. She had frequent headaches. Her appetite was good. She sweated freely. She had tremors of her hands.

Condition on Admission.

The patient was a thin, anæmic girl, weighing 37.4 kilograms. She had slight exophthalmos. There was a considerable enlargement of the thyreoid gland. A bruit was heard over the gland. There was slight hypertrophy of the left ventricle of the heart. The pulse rate varied between 80 and 110. There was a slight tremor of the hands.

Clinical Course.

On April 5 her basal metabolic rate was + 17%. She was given a fat-free diet with cod liver oil.
On April 19 her basal metabolic rate was + 13%.
On April 20 her tonsils were enucleated.
On April 26 her basal metabolic rate was — 3%.
On May 8 she was given tincture of iodine in doses of 0.59 mil three times a day.
On May 10 her basal metabolic rate was + 32%.
On May 12 the dose of tincture of iodine was doubled.
On May 17 her basal metabolic rate was + 19%.
On May 23 her weight was 42.4 kilograms.
On May 24 her basal metabolic rate was + 46%.
On May 30 she had an attack of diarrhœa with a rise of temperature. The iodine administration was stopped.
On May 31 her basal metabolic rate was + 63%.
On June 7 her basal metabolic rate was + 86%. The patient's condition was much worse. Her pulse rate was 130.
On June 14 her basal metabolic rate was + 76%.
On June 17 the iodine was resumed.
On June 21 she was transferred to a surgical ward under Mr. Dunhill.
On June 23 partial thyreoidectomy was performed.
On June 30 her basal metabolic rate was + 75%.
On July 6 she was sent away for a holiday.
On September 21 she was re-admitted under Mr. Dunhill. She felt better, but still suffered from palpitations and weakness. Her weight was 49.5 kilograms. Her pulse rate varied between 116 to 120.
On September 23 a further portion of the thyreoid gland was removed.
On October 4 her basal metabolic rate was + 23%.
On October 8 she was discharged. She felt very well. Her pulse rate was 88. Her nervous condition was much better.

In the case of this girl the basal metabolic rate was higher when she was finally discharged than it was on her first admission, but I do not doubt that the rate would fall further, as the last reading was taken a few days after her second operation. During her stay in the medical ward she became gradually worse. The only drug which afforded any relief was iodine. As soon as this was stopped she felt much worse. It had to be given in gradually increasing doses.

During the attack of diarrhœa the iodine was stopped. The basal metabolic rate at once rose enormously and her condition became serious.

At one stage of the illness, after the tonsillectomy, it appeared that the basal metabolic rate would remain normal, but it soon rose again, so that the improvement was of a very temporary nature.

When re-admitted after a holiday following her first operation she was obviously much improved and had gained weight. The pulse, however, was still rapid and the basal metabolic rate was still raised, which showed the necessity for removal of a further portion of the thyreoid gland.

III. E.E., aged twenty-seven years, was admitted under the care of Professor Fraser on March 8, 1921, complaining of insomnia, swelling of the neck, depression of spirits and irritability.

The history dated back nine years. At that time she had an attack of acute rheumatism, then swelling of the neck and prominence of the eyes were noticed. She was in hospital for seven months. She had steadily improved since then up to December, 1920, when the swelling reappeared and the eyes again became prominent.

She had lost a little weight during the last few months. She always had trouble with her tonsils, which became swollen whenever she "caught a cold."

Condition on Admission.

The patient's weight was 51 kilograms. Her pulse rate varied between 90 and 120. Exophthalmos was present. Joffroy's, Moebius's and Stellwag's signs were not elicited. The skin felt moist.

There was a slight fullness in the region of the thyreoid gland. No bruit was heard over the gland.

On looking up the hospital case records it was found that the patient had been admitted in 1911, complaining of palpitation and weakness. She had then had an enlarged thyreoid gland, tremors and marked exophthalmos. Von Graefe's, Moebius's and Stellwag's signs had been elicited. A peri-tonsillar abscess was opened.

Clinical Course.

On March 9 her basal metabolic rate was + 19%. She was given a fat-free diet with cod liver oil and iodide of potash in doses of 0.32 gramme three times a day.
On March 22 her basal metabolic rate was + 18%.
On April 1 she had an attack of follicular tonsillitis.
On April 5 her basal metabolic rate was + 18%.
On April 19 her basal metabolic rate was + 10%.
On April 20 her tonsils were enucleated.
On April 26 her basal metabolic rate was — 4%.
On May 7 tincture of iodine was prescribed in doses of 0.5 mil three times a day.
On May 10 her basal metabolic rate was at the normal level. Her pulse rate varied between 70 to 90. The tincture of iodine was increased to 1.2 mils.
On May 17 the tincture of iodine was further increased to 2.4 mils.
On May 18 the patient was discharged. She felt much better.
On May 27 the patient attended at the out-patients' department. She had taken no iodine since her discharge. She stated that she felt much worse. She was given tincture of iodine in doses of 2.4 mils three times a day.
On June 7 she felt much better again.

On July 1 she complained of "knocking of the heart" and of feeling ill.
On July 26 her weight was 48.75 kilograms and her pulse rate 140.
On August 9 her weight was 48.3 kilograms and her pulse rate 140.
On September 1 her basal metabolic rate was + 10%. This reading was taken by Dr. Graham.
On September 13 she was admitted under Mr. Dunhill.
On September 16 partial thyreoidectomy was performed.
On October 1 the patient had a mild attack of appendicitis. The appendix was removed.
On October 4 her basal metabolic rate was — 2%.
On October 5 she was discharged. She felt cheerful and much better.

Histological Report.

"There is a large increase in the number of acini, which are smaller than normal. There is relative diminution of colloid. Marked round cell infiltration is present. The blood vessels are large, dilated and congested. The secretory cells are two or three layers thick in places."

This patient was also under observation for several months. At no time was the basal metabolic rate very much raised.

After enucleation of the tonsils there was a temporary improvement, but she soon relapsed. She felt well when she first took iodine, but the dose had to be increased and she finally relapsed.

After the removal of portion of the thyreoid gland she informed me that she felt quite different and that she was sure she would be well now.

In this case it will be noted that there was a history of sepsis in the tonsils. On being questioned the patient gave a history of what were possibly attacks of appendicitis.

IV. J.A., aged seventeen years, was admitted under the care of Mr. Dunhill on May 31, 1921, complaining of vomiting and swelling of the neck.

She first felt ill in June, 1919. She was irritable and tired and remained so for two months. She then improved. In August, 1920, she was confronted with trouble over family matters and her symptoms returned. She suffered from attacks of vomiting in the mornings and from frontal headache and she became bad tempered. She was very tremulous and easily frightened and upset. Her eyes commenced to protrude. She improved in November, 1920, but then noticed a swelling in the neck. In March, 1921, she became worse again.

For the previous five months her heart had been beating harder and she got out of breath easily. She had lost 6.35 kilograms in weight in the previous six months.

Condition on Admission.

The patient's weight was 39.9 kilograms. There was considerable exophthalmos. Von Graefe's and Joffroy's signs were elicited. The thyreoid gland was enlarged symmetrically.

The heart was not hypertrophied. A systolic bruit was heard at the base of the heart. The pulse rate lay between 110 and 130.

Clinical Course.

On June 7 her basal metabolic rate was + 82%.
On June 9 partial thyreoidectomy was performed.
On June 28 her basal metabolic rate was + 52%. She was sent to a convalescent home.
On September 7 she was re-admitted to hospital. She had gained nine kilograms in weight. She felt better, but still had disinclination for work. She was still easily frightened and tremulous. She sweated freely. Her pulse rate was 100. Exophthalmos was still present. Von Graefe's and Joffroy's signs were not elicited, but Stellwag's sign was. The cardiac bruit had disappeared. There was now no vomiting.
On September 15 her basal metabolic rate was + 57%.
On September 16 a further portion of the thyreoid gland was removed.
On September 23 her basal metabolic rate was + 29%.
On September 28 her sweating had diminished. Her heart did not beat so forcibly. The exophthalmos was lessening.
On September 30 she was discharged. Her pulse rate was 94.

Histological Reports.

June 9: "Scarcely any colloid is seen. The vesicles are mostly small, some with infolding of walls. The lining cells are large and in some places columnar. There is a general infiltration with round cells."

September 20: "Dilated acini filled with colloid and broken-down cells are seen. The walls between some of the neighbouring acini are broken down, leading to the formation of large spaces. In some places there is marked hyperplasia of the secretory cells, which are six to eight layers thick; in other places there is breaking down of the secretory cells. There is no increase in the connective tissue stroma. Large, dilated blood vessels are present. There is an infiltration with round cells."

This was a severe case of Graves's disease in which no medical treatment was attempted, the patient being in a surgical ward all the time. She was very much improved after the first operation and gained weight, but on re-admission the basal metabolic rate was still much raised and the pulse rate was rapid. After the second operation she felt much better and her nervousness had practically disappeared when last seen.

There was a substantial reduction in the basal metabolic rate, which would probably fall still further; but no opportunity occurred of seeing the patient again.

V. E.H., aged 40 years, was admitted under the care of Professor Fraser on May 31, 1921, complaining of "nervousness and swelling of the neck."

During the summer of 1920 she began to be "nervy and jumpy." She also noticed palpitations and breathlessness on exertion. In November, 1920, she commenced to have headaches. She had been in bed since March, 1921.

Her eyes had become prominent and her neck was swollen. She had noticed tremor of the hands. There had been a loss of 12.7 kilograms in weight since December, 1920. Her appetite was good.

She gave a history of a mental shock a year ago.

She had had several attacks of tonsillitis, the last in 1914; she had had quinsy (bilateral) in 1920. Her teeth had always been troublesome.

Condition on Admission.

There was definite exophthalmos. Von Graefe's, Stellwag's, Moebius's and Joffroy's signs were elicited. Her teeth were in a septic condition. There was slight swelling of the thyreoid gland. A bruit was heard over the gland. A systolic bruit was heard at the apex of the heart. Her pulse rate varied from 100 to 130. The patient was very nervous and was kept in bed behind screens.

Clinical Course.

On June 7 she was still very nervous and excitable. Her basal metabolic rate was + 142%.
On June 10 she complained of sore throat. She was found to be suffering from a severe attack of tonsillitis.
On June 21 her basal metabolic rate was + 201%.
On June 28 six carious teeth were extracted.
On July 5 her basal metabolic rate was + 62%.
On July 6 her tonsils were enucleated.
On July 20 her pulse rate was between 90 to 100. She was improving in health, but declined further treatment, so was discharged.

This was a very severe case. The patient was always terrified and it was difficult to get her to keep still during the experiments, so that allowance must be made for the high readings obtained. Her condition was improving rapidly, however, and this is reflected in the lowering of the basal metabolic

rate. The improvement in this case was due to rest in bed and removal of septic foci.

VI. B.S., aged twenty-six years, was admitted under the care of Mr. Dunhill on November 7, 1921, complaining of "swelling in the neck, shortness of breath and trembling of the fingers."

In June, 1919, she had noticed "a lump in her throat." Two months later her eyes began to protrude and she had occasional attacks of vomiting at night. Soon after this she had noticed that her fingers trembled. Then she had become dyspnœic on exertion and had found that she sweated very easily. These symptoms had persisted with varying severity up to the time of admission. There had been no loss of weight.

In 1920 she had undergone treatment for seven weeks by dieting and irradiation with X-rays.

Condition on Admission.

The patient appeared to be robust and not nervous, although she stated that she was easily frightened. Her pulse rate was between 70 and 84.

There was pigmentation of the face, neck and abdomen. Exophthalmos was present. Von Graefe's, Stellwag's and Joffroy's signs were elicited. There was considerable enlargement of the thyreoid gland. A bruit was heard over the gland.

Clinical Course.

On November 10 her basal metabolic rate was + 174%. Partial thyreoidectomy was performed.

On November 17 her basal metabolic rate was + 28% and her pulse rate 76. The patient was discharged feeling better.

Histological Report.

"Section of the deep part of the thyreoid gland shows many large vesicles containing colloid. The lining cells are columnar. There is crinkling of the walls. Many small vesicles are present; some are collapsed. There is great increase of fibrous tissue. No infiltration with round cells is seen.

"Superficial part of the gland presents a similar picture, but with much more fibrosis."

This case reveals a poor therapeutic result from X-ray treatment.

The first reading obtained was very high and the nervous anticipation of the operation to be performed that same afternoon probably influenced this to a large extent.

There is, however, a great reduction in the basal metabolic rate after partial thyreoidectomy.

VII. L.H., aged nineteen years, was admitted under the care of Mr. Dunhill on November 28, 1921.

In 1918 she had noticed a swelling of the neck. In March, 1921, her eyes had become prominent. She suffered from frequent "bilious attacks," from palpitations and from catarrhal conditions. She sweated very freely. She had been subjected to X-ray treatment. Since March, 1921, she had had twelve applications.

Condition on Admission.

The skin was flushed. Exophthalmos was present. Von Graefe's and Stellwag's signs were elicited. The thyreoid gland was uniformly enlarged. The pulse rate varied between 120 and 136.

Clinical Course.

On December 6 her basal metabolic rate was + 120%.
On December 8 partial thyreoidectomy was performed.
On December 15 her basal metabolic rate was + 22%. At this stage she was less nervous; the tremor had diminished. The eye signs were unchanged and the pulse was still rapid, varying between 110 and 124.

This record shows a poor therapeutic result from X-ray treatment. It also shows a remarkable fall in the basal metabolic rate following removal of portion of the thyreoid gland. At the same time the patient felt much better.

VIII. M.M., aged twenty-one years, was admitted under the care of Mr. Dunhill on October 24, 1921, complaining of "swelling in the front of the neck and of breathlessness."

Six years before she had noticed a swelling of the neck; this swelling had gradually increased in size. There had been no loss of weight. She became breathless on slight exertion. There was a history of a prior attack of tonsillitis.

Condition on Admission.

There was no exophthalmos. Neither von Graefe's nor Stellwag's signs were elicited. There was a large, soft swelling in the region of the thyreoid gland. The pulse rate varied between 96 and 104. There was no tremor.

Clinical Course.

On October 27 her basal metabolic rate was + 56%.
On October 27 partial thyreoidectomy was performed.
On November 3 her basal metabolic rate was + 40% and her pulse rate 96.

Histological Report.

"There are large numbers of small colloid cysts. Many vesicles are seen containing colloid and lined by flattened epithelium. There are well marked patches of infiltration with round cells."

This case is an example of the so-called toxic goître in which the pulse rate is raised and the basal metabolic rate is raised above normal.

There was a decrease in the basal metabolic rate after operative treatment, but the patient left the hospital and a further estimation could not be made.

IX. G.N., aged forty-five years, was admitted under the care of Mr. Dunhill on September 23, 1921.

Since October, 1920, she had always felt tired and easily became exhausted. She had gradually lost weight—13.6 kilograms in all. Her appetite was good. She noticed that her heart beat very fast and violently at nights. There was a history of mental worry three years previously.

Condition on Admission.

There was some exophthalmos. The thyreoid gland was about half as large again as normal. The pulse rate was 120.

Clinical Course.

On September 29 her basal metabolic rate was + 36%. An operation was performed on the same day, when a portion of the thyreoid gland was removed.

This case shows a raised basal metabolic rate in a patient with Graves's disease.

X. D.C., aged twenty-nine years, a hospital sister, was admitted under the care of Mr. Dunhill on November 16, 1921, complaining of "palpitations."

She was in good health until four years previously. She had then begun to suffer from palpitations and at the same time had noticed prominence of the eyes. The latter had gradually become more marked. She had taken her pulse rate and had found it to be 160 after a night's work. She had become breathless after slight exertion and had noticed tremors of the hands.

There had been a loss of nineteen kilograms in weight in the course of a few months, but she had improved again and had regained the lost weight. The symptoms had lessened, but had not disappeared.

In 1920 there was a recurrence of the palpitations and sleeplessness. The patient perspired freely.

During the last seven and a half months she had been in a hospital. She had been in bed until one month before admission. Her father had had a "goître" when a young man.

Condition on Admission.

There was considerable exophthalmos. Von Graefe's, Moebius's, Stellwag's and Joffroy's signs were elicited. There was a symmetrical enlargement of the thyreoid gland.

The apex beat of the heart was in the fifth space, 11.4 centimetres from the mid-line. Over the pulmonary area a systolic bruit was heard. The pulse rate was 140.

Clinical Course.

On November 17 her basal metabolic rate was + 72%.
On November 24 partial thyreoidectomy was performed.
On November 30 the patient was discharged. Her pulse rate was 112.

This patient was unfortunately discharged before a second reading could be taken.

The case is an illustration of a high basal metabolic rate in the course of a Graves's disease of a severe type.

XI. E.S., aged thirty-one years, was admitted under the care of Professor Fraser on November 30, 1921.

She had been in good health until April, 1921, when she had first noticed a swelling in the neck. In June her eyes had commenced to protrude; the swelling in the neck had become more evident and there had been a condition of general weakness. In November she had noticed swelling of the left hand and arm and also of both legs.

Condition on Admission.

Exophthalmos was conspicuous. Von Graefe's, Stellwag's, Moebius's and Joffroy's signs were elicited. Her teeth were very carious; pyorrhœa was present. There was a large swelling corresponding with the situation of the thyreoid gland. A systolic bruit was heard over the enlargement.

The apex beat of the heart was in the fifth space, fourteen centimetres from the mid-line. A systolic bruit was heard at the apex, conducted towards the axilla. A pericardial friction rub was heard in the second space on the left side. The pulse rate was between 100 and 130.

Œdema of both legs and back was present. The urine contained albumin (0.6%) and blood. There were granular and hyaline casts present.

On December 6 the basal metabolic rate was + 58%.

This patient suffered from nephritis, for which she was undergoing treatment. She also suffered from Graves's disease and the case is quoted as another example of a raised basal metabolic rate in this disease.

DISCUSSION.

From this small series of eleven cases it has been possible to draw some conclusions, not only from the records of the basal metabolic rates, but also from a study of the history of the patients.

Of these eleven cases, ten may be classed as Graves's disease or exophthalmic goître and the remaining one (VIII.) as an example of a toxic goître.

In every case the basal metabolic rate is seen to be raised above the standard accepted as the normal average when we take the observations made prior to any active treatment.

This raised rate is in itself an aid to diagnosis in borderland cases.

McCaskey[6] writes:

Probably more than 90% of all cases showing marked increase in metabolic rate are due to hyperthyreoidism. Other endocrine glands play a small, subservient rôle.

Lusk[7] states:

A high metabolism is observed in cases of exophthalmic goître. Müller reports a case of an individual weighing twenty-nine kilograms who constantly lost weight, notwithstanding a daily diet containing sixty-eight grammes of protein with fifty-eight calories per kilogram. Under such circumstances there is undoubtedly an abnormally high destruction of both protein and fat. The increased protein destruction has been attributed to toxic influence of the thyreoid secretion.

In connexion with this it may be noted that in the series investigated there was a history of loss of weight in seven patients (I., II., III., IV., V., IX. and X.) and this was so despite the fact that all these individuals had good appetites. The basal metabolic rate provided a good index of the severity of the illness, for it was found that those patients who were suffering severe forms of exophthalmic goître, judged from the clinical standpoint, gave the highest readings.

Also it was noticed that, as the health of the patient varied from week to week, so in a corresponding manner did the basal metabolic rate fluctuate. The best illustration of this is provided by Patient II.. During this girl's stay in the medical ward she became gradually worse; the symptoms increased in severity and she felt worse each week. All this time the basal metabolic rate was gradually rising until at one stage it was 86% above the normal, after having been raised only 17% on admission. As soon as improvement took place the rate fell again, though it was still raised on her discharge.

Several of the patients in the series were admitted to a medical ward for observation and treatment to obviate, if possible, the necessity for surgical measures. It must be confessed, however, that in this small series medical treatment was a failure. In some it was possible to alleviate the symptoms for a time, but the improvement was not permanent. The only drug which had any specific effect was iodine. This was given in the form of the tincture of the French Pharmacopœia Codex, starting with a dose of about 0.6 mil three times a day and the amount taken being gradually increased. This drug produced an improvement in that the patient felt better when she was taking it, but the improvement was generally of a temporary nature. It was necessary to increase the dose each week and when the administration was stopped, there was a relapse. Patient II. of the series at one stage had an attack of diarrhœa; the iodine was therefore withheld. Within a day the girl complained that she was worse and she begged that the iodine might be resumed. An immediate improvement in her condition was manifest as soon as she resumed taking the drug, but the basal metabolic rate did not fall correspondingly, showing that further treatment was necessary. Hence this patient was transferred to the surgical ward.

The presence of a septic focus is to be noted in a proportion of the patients in this series. In two patients (I. and V.) dental sepsis was present; in five (I., II., III., V. and VIII.) the tonsils were in a septic condition; in two (I. and II.) an attack of appendicitis occurred during their stay in hospital.

The history of previous attacks of tonsillitis is common enough to warrant inclusion amongst the ætiological factors of the disease and in the treatment of the patient the first step to be taken is the removal of this septic focus. In one patient (V.) great improvement followed the removal of teeth and tonsils, but further treatment was necessary; however, this woman refused to remain in hospital any

longer. In two patients (II. and III.) the basal metabolic rate fell to normal after enucleation of the tonsils and it was hoped that a cure had resulted, but the patients soon relapsed and the rate rose again.

Another point noticed in the history of these patients is the occurrence of some nervous shock prior to the onset of the disease. Patient I. first felt ill after the excitement of the armistice; Patient IV. gave a history of family worries; Patient V. underwent a severe mental shock of some nature; Patient IX. stated that she had undergone much worry in her home life.

Two patients (VI. and VII.) had been subjected to X-ray treatment prior to admission; but this does not appear to have influenced the course of the disease, for in both cases there was a very high basal metabolic rate.

Very noticeable was the good effect of surgical treatment by removal of portion of the affected thyreoid gland. The patients gained weight, the exophthalmos and the nervous symptoms lessened, the pulse rate was diminished and the basal metabolic rate fell.

Unfortunately I was unable to follow up all the patients as long as was really necessary, but in those whom I was able to watch over a period of some months, there was no doubt as to the improvement produced.

It was as a guide in the treatment of the case that the estimation of the basal metabolic rate provided such useful information. It gave the surgeon an index of the severity of the case. It served to show that after the first operation, followed by a holiday, although the patient had gained weight and felt well, she was not yet cured, for the basal metabolic rate was still raised; the pulse rate was also still rapid. Hence it was necessary to remove a further portion of the thyreoid gland.

From observation of these cases I am convinced that the medical treatment of Graves's disease is unsatisfactory and that the best results are given by removal of part of the affected gland. The operation is not without risk, however; for the two or three days following the operation the patient is sometimes seriously ill and fatalities do occur.

The majority of the patients in this series had their operation performed under local anæsthesia, novocaine being used. A preliminary hypodermic injection of morphine and scopolamine was given and the patient's eyes were securely bandaged. It is better that the day of operation should not be known to them.

As an example of the success of surgical treatment, I may quote a case I saw shown by Mr. Dunhill at a meeting of the Royal Society of Medicine in London. The patient was a woman who had suffered from Graves's disease accompanied by auricular fibrillation, the latter being graphically recorded by an electro-cardiographic tracing. After surgical treatment the symptoms and signs of Graves's disease had disappeared and the heart had resumed its normal rate and rhythm, the electro-cardiographic tracing again being produced.

It is to be hoped that the records of these cases will serve as a small proof of the usefulness of the estimation of the basal metabolic rate as a guide in the diagnosis and treatment of Graves's disease.

As calculated by the method described there is a liability to error, but with practice and care the percentage of this can be reduced so that a guide sufficiently accurate for clinical purposes is attained.

I have to thank Professor F. R. Fraser, Director of the Medical Unit, and Mr. T. P. Dunhill, Assistant Director of the Surgical Unit, at Saint Bartholomew's Hospital for permission to write on an investigation carried out in wards under their charge and also for much useful guidance.

Dr. George Graham also helped in many ways and it was from him that I first learned the use of the machine.

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CHRONIC SUPPURATIVE OTITIS.[1]

BY H. M. JAY, M.B., B.S. (ADELAIDE),
Honorary Surgeon to the Ear, Nose and Throat Department, Adelaide Hospital.

AT the outset of this short paper let me assure you that it has no claim to originality, either of fact or theory. All that it contains has been more convincingly expressed by acknowledged authorities in all parts of the world; and I therefore feel that my first duty must be to introduce to you my excuse for bringing forward this subject.

May I point out in the first place that the very prevalence of chronic suppurative otitis tends to allow it to become ignored or passed lightly over, more especially as relatively few of us see its serious side. I would ask you, though, to look at this affection from the point of view of the aural surgeon, the man who sees it in all its varied aspects, who follows it from its inception in some cases, but who most often deals with it as a well established and intractable condition, who sees its unfortunate results, even its calamities.

Three things I think may be postulated. Firstly, the vast majority of all classes of the community is indifferent to aural suppuration. Secondly, the disease is a menace to the efficiency, even the life of the individual, though, fortunately, owing to lack of infectivity, it does not threaten the whole community. Thirdly, if a sufficient number of writers or speakers continues to give expression to the same truths (or those things which they believe

[1] Read at a meeting of the South Australian Branch of the British Medical Association on October 26, 1922.

to be truths) with sufficient vehemence and sincerity, eventually they will be heard.

These three statements which I do think are not contestable, together provide the excuse for this paper.

Briefly I wish to draw your attention to chronic aural suppuration, not to tell you anything fresh about it, though, needless to say, I would if I could.

The field which the subject of chronic suppurative disease presents, is far too large to be more than roughly worked in the course of a short paper and it is not my intention so much to present you with a mass of detail, as to emphasize its frequency and to deal with its causes, danger and prevention, touching on the salient points only. The question of treatment involves such a lengthy discussion of contingencies and methods that I do not intend to deal with it.

Occurrence.

There is no doubt in my mind that the profession as a whole does not realize how wide-spread is this affection. The reason for this is, I think, that the majority of these patients drift away from the general practitioner. They either become used to the condition and put up with it as a necessary evil or else consult those of us who have confined ourselves to this class of work. The patient in the worst type of case, that in which cerebral complications develope, ultimately comes to the surgeon. The individual general practitioner is, therefore, rarely called upon to treat the urgent complications of this disease and frequently contents himself with ordering the use of a syringe or some peroxide drops. Many, I think, do not realize the danger to health, efficiency and even life which may lurk in what, unfortunately, is too often referred to as "only a running ear." How many thousand persons with chronic otorrhœa there are in South Australia it is impossible to estimate in the absence of any extensive statistics; but I should say, speaking purely from personal experience, that the numbers would be a surprise to the profession generally. Unfortunately, I have been unable to lay my hands on any figures from outside sources, but the Adelaide Hospital statistics are interesting.

I have examined the records of the last eight hundred patients treated at the Out-Patient Department and was surprised to find amongst them seventy-seven with chronic otorrhœa. In the compilation of these figures "chronic" has been taken to mean "anything of over three months' duration." It does not require much mathematical assistance to demonstrate that this is a deplorably large percentage, especially when one considers that with good treatment in the initial stages the majority would have been cured. Six hundred and thirty new patients went through the department in 1921. Using the above figures as a basis for calculation, this means that approximately sixty patients with chronic suppurative otitis were treated in twelve months for the first time in hospital.

The majority of these patients have been driven to seek advice by general headache, local pain, deafness, vertigo, the foul smell of the discharge, *et cetera*, and in considering the figures in relation to the population, it must be borne in mind that necessarily they constitute only a small percentage of the number affected. The remainder, who go on their way untreated and tolerant of their affliction, are nevertheless potential material for the surgeon the moment the disease process spreads beyond certain limits.

One may justifiably ask: "Why the apparent indifference to a trouble which is so wide-spread and which is fraught with such possibilities?"

I regard it as due to two main causes: (*i.*) lack of knowledge amongst the lay populace and (*ii.*) a policy of *laissez faire* amongst the profession in general. In each case we, as a profession, are primarily responsible. It is our duty to warn parents of the far-reaching effects of aural suppuration and to make them realize the benefits of early treatment. Long-cherished ideas are difficult to eradicate and the conviction that aural suppuration is of no consequence, will die hard. The fact that large numbers go on from year to year without any serious results, can be no excuse for our shutting our eyes to the fact that complications do occur very frequently and with very serious results. Apart from this, we must remember that the patient is always more or less deaf and suffers constantly from absorption of toxins. A large number also seek relief from headache, giddiness and so on.

I do not wish to weary you with many extracts from the literature on this subject. Reference to its importance may be met with in almost any copy of any otological journal. The two following expressions of opinion, taken from well-known textbooks, seem, however, to be worth quoting:

Barnhill Wales[1] writes:

> It is now generally recognized that grave danger to life attends the majority of all chronic suppurative ear diseases. . . . The middle ear and mastoid antrum lie in such intimate relation to the *dura mater* of the cerebrum and cerebellum that infection of these latter structures would seem an almost inevitable consequence of a prolonged suppuration within the former.

Ballenger[2] says:

> When we recall the fact that none of the prominent insurance companies will accept an applicant who is affected with chronic otorrhœa, we are brought face to face with the business man's view of the disease. He has found, after a careful study of the mortality tables, that applicants thus affected do not live to the full term of their expectancy.

Causation.

As regards the causation of chronic aural suppuration, it is a safe generalization to state that the majority of cases are the result of an acute attack which has gone untreated or has been improperly treated. Occasionally one comes across a case in which there is no history of an acute stage, but these will be found, as a rule, to be fresh outbreaks of pre-existing disease.

In order to strike at the root of the matter under discussion, it is necessary to direct your attention to the causes of acute *otitis media*, for on the recognition of the latter and on its successful treatment depends the whole future of the ear.

Acute *otitis media* may arise from a variety of causes, of which the following are the principal:

1. Acute rhinitis or naso-pharyngitis—the common "cold."
2. Influenza.

3. The exanthemata.

4. Extension through the Eustachian tubes of a chronic naso-pharyngitis, suppurative rhinitis or sinusitis. In this connexion I should like to issue a warning against the habit of forcible nose-blowing after the use of a nasal douche.

5. Injury resulting in the rupture of the *membrana tympani* and the entry of pyogenic organisms.

6. As a predisposing cause the presence of adenoids and enlarged or diseased tonsils stands pre-eminent.

I regard the routine examination of the eyes, ears and throats of school children as one of the greatest advances in preventive medicine in the history of this State. I only wish it were possible to go further and to introduce an examining forefinger into every child's naso-pharynx, for many children who have no tonsillar hypertrophy, have large adenoid pads and, whatever may be said of the abuse of tonsillectomy, I think that very few medical men would urge the retention of any considerable mass of adenoid growths on the grounds on their utility. In support of this let me quote from a paper by Dr. Graham Brown.[3] He says:

> When I first went on the honorary staff of the Hospital for Sick Children, we were doing as many as eight mastoidectomy operations a month (all absolutely necessary), and perhaps 80% of adenoidectomy and tonsillectomy in the same period. During the last six months that I was at the hospital I did not do one mastoidectomy (for acute or chronic running ear), but I was doing as many as two hundred adenoidectomies and tonsillectomies in a month. In all cases we followed this rule of cleaning out the post-nasal space as soon as practicable. The results, you will agree, are sufficient to prove the point.

To return to acute *otitis media*, in the early stages the outstanding symptoms are pain and deafness, especially pain. A child which is incapable of describing his sensations, will become restless, will toss about in bed and rub its ear. When this occurs in the course of a cold, measles, scarlatina, etc., the medical attendant should lose no time, but should examine the drum immediately. The appearance may vary from a slight general redness of the drum with a band of injection along the handle of the malleus to a dark red coloration of the whole of the membrane, with bulging in one or other of the quadrants, generally the posterior superior. Deafness varies from a slight dulness to almost complete loss of hearing. The temperature is generally raised, sometimes as high as 39° C.. There may be tenderness over the mastoid, even without actual mastoid involvement. It disappears on paracentesis.

Prevention.

As this practically resolves itself into the abortion of an acute attack or its energetic treatment should it mature, it is convenient to deal with it at this stage of the paper.

In the initial stages of an acute otitis, pain may be lessened by the use of dry heat (the best method is for the patient to lie with his head on a hot water bag) and of what, for want of a better term, may be styled "negative Valsalva." This procedure is effected by swallowing whilst holding the nose, the result being a partial vacuum in the naso-pharynx and a powerful suction down through the Eustachian tubes. If these be sufficiently patent, the fluid in the middle ear is drawn down into the naso-pharynx. The manœuvre is assisted by bending the head forwards and away from the affected side as each mouthful is swallowed, the parts thus being placed in the best position for natural drainage.

The pain may also be relieved by the instillation of warm drops of glycerine and carbolic acid (10%) or the application of the same drops on a pledget of wool placed in contact with the drum. In many cases the process may be aborted by these simple methods. On the first sign of bulging the drum should be incised and a gauze wick inserted for drainage. Should the membrane rupture spontaneously, it may be necessary to enlarge the perforation in order to insure adequate drainage.

The middle ear must be kept as clean as possible during the subsequent course of the affection by the use of the Politzer bag or Valsalva's method. This is a most important part of the treatment and the failure of many cases to clear up may be directly attributed to its omission. Where the discharge is profuse, gentle syringing, sufficient to clear out the meatus, may be practised, followed by drying and the use of antiseptic drugs. Forcible use of the syringe should be avoided.

At the first opportunity the tonsils should be removed if they are of the obstructive or chronic inflammatory type and the post-nasal space cleared of adenoids. With regard to the latter, I should like to draw attention to the necessity of freeing the fossæ of Rosenmüller of adenoid tissue. This frequently exists in the form of adhesions between the naso-pharyngeal wall and the tubal orifices and will serve to keep the aural suppuration going, even though the main body of adenoid tissue be removed. No medical man who omits to examine the pharynx and naso-pharynx in cases of aural suppuration and to remedy the conditions which he is almost certain to find there, can ascribe his failure in the treatment to these cases to anything but neglect.

Should treatment along these lines be instituted, there is little doubt that the number of chronic cases would be materially lessened. Parents should have the importance of regular and efficient treatment impressed on them and should be warned of the consequences of neglect.

Complications.

In spite of all that can be done, a certain number of these cases do not clear up. The infection extends through the aditus to the mastoid antrum and any hope of obtaining a cure by other means than operation practically vanishes. The membrane may heal and the middle ear disease apparently subside, only to break out again as re-infection occurs from the mastoid antrum. The same course may follow invasion of the attic; the aural discharge may cease, but break out again in the space of a few weeks. Occasionally months may pass without any sign of trouble beyond a few twinges of pain or occasional dull headache, but ultimately a relapse occurs.

Involvement of the antrum opens up the way for infection of the lateral sinus and posterior fossa, whilst attic disease exposes the patient to a risk of

extension to the middle fossa. General infection through the venous circulation and cerebral or cerebellar abscess then becomes possible. Add to this the fact that at any time destruction of bone may lead to labyrinthitis, that permanent deafness of greater or less degree is certain, that erosion of the facial canal may lead to facial paralysis and that the patient will certainly suffer from the effects of the continual absorption of toxins and it will be realized that the possessor of a chronic middle ear suppuration is not to be envied.

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POST-GRADUATE WORK IN EUROPE.

BY J. W. DUNBAR HOOPER, M.D. (DURHAM), L.R.C.P., L.R.C.S. (EDINBURGH),
Melbourne.

HAVING recently returned to Melbourne after an absence of seven and a half months, most of which time I spent at various London hospitals and visiting hospitals in Paris, Edinburgh, Liverpool, Lausanne, Geneva and Zurich and gathering evidence of the most recent advances in medicine, surgery, obstetrics and bio-chemistry, it has been suggested to me that the conclusions I came to with regard to post-graduate work might be of use to medical practitioners who intend going abroad for a similar purpose.

First of all, I would like to point out that the articles in *The British Medical Journal* for April 29, 1922, and the "Educational Number" of September 2, 1922, were, in my opinion, a full and honest *résumé* of the post-graduate work which can be obtained in London. It is quite clear that students and post-graduate men cannot attend the same classes.

I would like to emphasize my own views in the following manner, dividing the objects for which men study, after they have taken their qualifications, into three classes: firstly, those who intend to take some higher degree which necessitates passing a very stiff examination, *e.g.*, for the Fellowship of the Royal College of Surgeons of England or for the Membership of the Royal College of Physicians of London; secondly, those men about forty years of age who have been in practice, say, ten or fifteen years and who desire to specialize in a particular branch of our profession in which, from a limited experience, they already feel themselves qualified to practise; and, thirdly, that large body of practitioners who feel that neither toil nor expense are too great which help them to gain knowledge and insight into the most recent methods for the prevention of disease or for the diagnosis of disease when it does occur. Such study can now be obtained in Australia, but any man going abroad may reach a contentment of mind and an increase of self-confidence which are indeed worth the gaining.

Now as regards the first class of men, there is, I think, a consensus of opinion that the graduate who desires to obtain further degrees or higher honours, must spend at least one full year in the attainment of his object. So vast is the area to be covered and so intense is the concentration of thought necessary to success, that it would be wise to enter one of the medical or surgical and bio-chemical units of a large teaching hospital, such as Saint Bartholomew's, University College, Saint Thomas's, Guy's, the London Hospital, the Middlesex, Westminster or Saint Mary's and stick most diligently to the work laid down, to the exclusion of all social or other distractions. At the same time, for the maintenance of his health, he would be wise to get away from London every week-end, not always by motor-car, but preferably by bicycle or walking.

Such an enthusiast on arrival in London should at once join the newly-formed Australian and New Zealand Medical Association and apply to the Honorary Secretaries, Dr. Campbell Milligan, and Mr. Bedford Russell, 86, Harley Street, for information on any points on which he desires enlightenment. Then he must join the Fellowship of Medicine which is conducted by a most earnest committee and to the Secretaries of which, Sir John McAlister and Miss Willis, I am deeply indebted for much courtesy and assistance.

For the second class of men, they also should join the two above mentioned associations, for they would find invaluable help from each. I would not, however, advise these men to be longer than three months in London, during which time they should attend either a medical, surgical or other unit as they desire, but concentrate only on the specialty which they intend to practise. After that, at least three months should be spent on the continent, especially in Paris, say, at La Pitié Hospital, l'Hôtel Dieu and the Baudeloc or at the Pasteur Institute; here, again, by taking copious notes and discussing what they see with the various men whom they would meet and who are on the same errand, their knowledge and interest in the work would be greatly increased.

Those interested in obstetrics would find much progress in Paris, Lausanne or Berne.

The annual meeting of the North of England Obstetrical Society was held this year in Liverpool, Professor Briggs in the chair. The hall was crowded and an extraordinarily interesting day was spent. Evidence concerning eclampsia had been collected from various places all over England, Scotland and Ireland and from statistics given to the reporters. This meeting was considered epoch-marking and has been already reported in various obstetrical journals.

The opportunities for clinical work in the various English provincial hospitals and in large workhouses are absolutely colossal, but the teaching powers are concentrated in London.

I cannot advise men whose time is so precious, to go to any of the smaller hospitals in London, unless attracted there by the light of some particular star whose performance they may admire or whose teaching has some special *réclame*.

The London School of Tropical Medicine and cer-

tain of the ante-natal clinics should not be missed, especially by men who are likely to practise in the tropics or in sparsely populated areas.

The third class should do very much as the second, but not so intensely; indeed, it would be unwise of them to follow closely the work of any one particular hospital or clinic. They would get much more satisfaction and broaden their views by going out of their way to see some of the bigger "guns" at work and meeting them socially.

The enormous field of preventive medicine should be studied by men who are in large practices and who may be called upon to enter into the service of the State or achieve municipal or parliamentary honours, for they will have the opportunity of guiding public opinion in matters of vital importance to the health of the community.

Unfortunately, I had not time to visit America to see for myself the enormous advances which the profession has made there, nor, frankly, do I think it necessary that a man should go there from Australia unless he wishes to specialize intensely in one particular direction, say, in some special department of surgery or in some particular line of medicine, such as the diseases of the kidneys or diabetes or in some of the wide groups of enterica.

I was fortunate, after visiting the Fellowship of Medicine very often and by the courtesy of Dr. Russell Andrews, of the London Hospital, and Dr. Fairbairn, of Saint Thomas's Hospital, to be permitted to attend the out-patients' department and the ward clinics of those hospitals. There I reviewed the foundations of my obstetrical beliefs and saw in practice—by men who were well-read specialists—the results of advanced work in other countries.

At the London School of Tropical Medicine, through the courtesy of Dr. Manson Bahr, I was able to see some of the work. I was, of course, much impressed by the work at Saint Mary's Hospital and by the Medical Unit at Saint Thomas's, where, working with Professor Hugh Maclean, was our Melbourne friend, Dr. Isaac Jones, teaching the investigation of the blood sugars and urea content with an enthusiasm which he conveyed to his listeners.

At the Chelsea Hospital for Women one learned from watching the master hand of Victor Bonney at work and by hearing Dr. Eden and others on their special lines of thought and experience.

At the University College Hospital the obstetrical and gynæcological wards under Professor Herbert Spencer are still the Mecca for many visitors. I also visited the Newcastle-upon-Tyne Hospital.

It was impossible to visit Paris without discussing the recent problems in obstetrics with Dr. de Vignes or attending the new La Pitié Hospital, with its thousand beds, opened in 1916 and full of admirable work by men whose names are world famous. And who, if he has had the privilege of visiting l'Institut Pasteur, can fail to recognize the scientific atmosphere of the place, the great caution in making deductions from their innumerable researches and the vast debt mankind owes the noble brain and heart of the man in whose honour the Institute was founded?

Going to little Switzerland, one may be forgiven at being surprised at the perfervid atmosphere of the medical schools in Berne and Lausanne, Geneva and Zurich. Perhaps, as I was specially interested in obstetrics and gynæcology, I paid more attention to them than to the equally renowned surgical and medical units where Kocher's influence is still to be recognized. I visited the Cantonale Hospital for Women in Lausanne, which was absolutely modern and up to date, with one hundred midwifery beds, the work being done by Professor Rosier and three highly trained assistants, with extraordinary good results in the low mortality rate and in low morbidity, due, I believe, to perfect asepsis and perfect coordination between the bacteriological, pathological and operative departments. They attributed their extraordinary low death rate in eclampsia to rigid adherence to the Strogonoff treatment.

Here are four hundred students being taught midwifery under the direct guidance of Professor Rosier, who is also privileged to take private patients into the hospital. In only one place did I come across an absolute rigid fetish for the treatment of eclampsia by Cæsarean section. In Zurich Professor Waldhardt told me that among the patients in the two hundred beds which are reserved for obstetric patients, only 2% are submitted to vaginal examination, either before or after labour. They always use rectal examination. He said that when a patient is admitted for eclampsia the routine is to withdraw two hundred cubic centimetres of blood, which is examined for albumin, urea and sugar; a small dose of morphine is given and if, after full dilatation of the *os* and fifty uterine contractions, the child is not delivered, the professor immediately proceeds to deliver by Cæsarean section by a transverse abdominal incision reflecting the bladder downwards. The mortality is 15%! Professor Waldhardt is a great upholder of Kielland's forceps.

While in Switzerland one should not miss a visit to Dr. Rollier's enormous clinic at Leysin, in the Canton Vallais, thirty-two kilometres from Montreux. I was exceptionally fortunate in that Dr. Perret, of Clarens, drove me there himself, through most glorious scenery, up to a height of nearly 1,220 metres, where Leysin is situated. Dr. Perret carries out cystoscopy for Dr. Rollier and has performed nephrectomy on one hundred and ten occasions for tuberculous disease of the kidney without a death. Leysin is on a plateau and surrounded by firs and pines are several houses built to admit the greatest amount of sun's rays especially for tuberculous patients, those with pulmonary being separated from those with bone lesion. Out of three thousand patients there are probably twelve hundred or more who have gone to consult Dr. Rollier, who, with seven assistants, does an enormous amount of work. At my visit he was lecturing in French (he speaks English also) to a class of thirty practitioners from all parts of the world on the advantages and methods of treatment of tuberculous diseases of bone, especially in the spine, by sunlight and open air. Around the walls of the hall where he lectured, skiagrams of children (taken on admission) with spinal lordosis, scoliosis and Pott's disease were seen. The name and age of each patient from whom the skiagram was taken, were given and

in a year or two or three years, as the case may be, these children would be photographed when running about in the snow and playing games; and the most recent skiagrams exhibited revealed no evidence of deformity. In July I saw children lying naked on the verandah, except for a loin cloth, with their eyes shaded. The heat of the sun on that particular day was so intense that, after a few minutes, none of the visiting medical men could remain with heads uncovered. Perfect silence and stillness are enjoined on every patient for two hours each day. One is told that, in the depth of winter, with snow on the ground, the rays of the sun are strong and are most invigorating. Even in winter the climate is mild and much walking is possible on the plateau.

Dr. Rollier takes no fees from the many doctors who attend his clinics and he personally offered me residence for one week as his guest. He only stipulates that the attendance at the classes shall be regular and the work followed with keenness. I believe it is no secret that the system of payment for treatment is on this wise. The patients deal with the lay directors of the clinic—some of whom are relatives of Dr. Rollier—and for every patient who is attended by Dr. Rollier or his assistants the sum of one Swiss franc per head *per diem* is given for Dr. Rollier, who, of course, has to bear the expenses of the apparatus used in carrying out the treatment and also to pay his assistants. The maintenance of his clinics and hotels is conducted by the lay directors.

At this date—1922—it would be impossible to visit Switzerland (indeed, it would be unwise for any physician to go on the continent) without seeing Henri Spahlinger, Doctor of Science, at Geneva, whose method of treating tuberculosis in bovine or human subjects is the talk of the day. I was fortunate indeed in having an introduction to him and I shall never forget his courtesy and patience and his extraordinary sincerity, his profound conviction that as the result of his studies and the methods, by which he has attained success, at least in protecting against the disease by inoculation and in the treatment of tuberculosis by certain sera and vaccines which he makes at his wonderful laboratory at Carouze. A man about forty, of extraordinary mental activity, who speaks fluently in at least three languages, who has travelled much, whose scientific mind is evident throughout conversation, whose zeal in research has affected all his co-workers at the laboratory at Carouze, Geneva; such a man, I venture to say, is a commanding figure in any sphere and, to my mind, he would hold his own in a gathering of professional men anywhere. Possibly Henri Spahlinger may fail in convincing expert physicians that he, with no medical training and no wards at his disposal, has attained the great joy and happiness of finding a cure for tuberculosis, but his obvious sincerity and perfect belief in himself and his methods are beyond denial. I have seen written evidence from the highest French physicians and from many English observers that they are satisfied on these points and that, after some years of research, he has, as he claims, attained perfection in his methods and has extraordinarily happy results in his treatment.

In *The Lancet* for January 7, 1922, can be found a *résumé* on some of his work. Scientific journals, I am told, give his methods of preparing his vaccine and serum.

It remains only to say that the practitioner who starts out to spend his holiday in the manner I have indicated, whether for the advantage of his own patients or to improve and assist the post-graduate work of his own State, must not enter upon such a so-called vacation—"'busman's holiday"—without first of all attending to his own health and seeing that he is in good fettle both for the voyage (which necessitates rapid change of climate and lack of exercise) and for the fatigue of standing listening to men teaching or watching operations. He must secure his daily exercise, so as to be able to enjoy the hospitality extended to him and thus to meet and exchange ideas with men whose mental calibre and physical strength are ever to be admired.

I, for one, have scant faith in attending a series of set lectures. One can read in a monograph what a leader has to say on the subject on which he is entitled to speak with authority, but the personality of a man, the charm of manner and depth of his knowledge can be better obtained from one or more conversations or a post-prandial discussion.

Men like Bland Sutton, Moynihan, Rollier, Spahlinger, Blair Bell, of Liverpool, Professor Briggs, also of Liverpool, Adami, Lockhart Mummery, Victor Bonney, Leonard Cheatle and many others leave marks on the observer by spoken words never to be forgotten.

There was a host of celebrated men and distinguished teachers whom I unfortunately could not meet.

In London one was glad to realize that the views and work done by Australians were recognized, especially the younger men, Professor Choyce, Professor Elliott Smith, Mr. Dunhill, Mr. Bedford Russell, Dr. Isaac Jones, Dr. Camac Wilkinson, and, thanks to the newly-formed Australian and New Zealand Medical Association, formed by men practising in London, no man from these shores wanting to enlarge his mind in the vast field of our glorious profession, need feel lonely or uncared for.

Reports of Cases.

UTERO-VESICO-VAGINAL FISTULA.

BY HOWARD BULLOCK, M.B., CH.M. (SYDNEY), F.R.C.S. (ENGLAND), B.Sc. (OXON.),
Assistant Honorary Surgeon, Sydney Hospital; Assistant Honorary Surgeon, Saint Vincent's Hospital, Darlinghurst.

VESICO-VAGINAL fistulæ are amongst the most unfortunate conditions a healthy woman can be afflicted with and one of the most intractable a surgeon is called upon to relieve. Feeling that it might be of interest to hear of the result of a rare type of this class of case impelled me to bring under your notice the case of Mrs. T., *ætatis* forty-one years, referred to me for operation. She has been married for fifteen years, has eight children, the eldest being fourteen years and the youngest three years. All births were normal and natural, except that of the last, which was a precipitate labour and was ushered in sud-

denly with much loss of blood. The patient remembers being taken to one of the large metropolitan lying-in hospitals in a semi-conscious condition and having an anæsthetic administered. She informs me that she was told that the child was delivered by forceps and that she was very ill for three weeks, that she was not able to leave the hospital for three months after the birth.

Since the birth on July 6, 1920, she had not passed urine naturally till operated upon by me on September 27, 1921. On examination the *os uteri* was found to be cut off completely from the vagina. There was not the minutest passage by which one could pass a fine probe into the uterus from the vagina (see Figure I.).

The patient was sent to Saint Vincent's Hospital, where cystoscopic examination revealed a rent on the posterior wall of the bladder, obliterating the right ureteric orifice. It was decided then to explore the abdomen, which was opened in the middle line above the pubes. The fundus of the uterus was found tilted anteriorly and bound firmly to the bladder by a hard, inflammatory mass which invaded the right side of the broad ligament considerably. The left Fallopian tube and ovary were freed from the uterus and the left ureter exposed to make certain that it would not be injured. The right ovary and Fallopian tube were removed. No trace of the right ureter could be found for 7.5 centimetres (three inches) from the bladder, as this portion was inextricably bound up in the inflammatory mass extending from the bladder into the broad ligament.

The uterus and the upper third of the vagina were removed and in this broad sweep the inflammatory mass in the broad ligament was included. During this step of the operation the urinary bladder was necessarily opened and the remains of the right ureteric orifice was seen represented as a small saccule of about six millimetres (a quarter of an inch) in depth. The right kidney was atrophied. The ragged edges of the bladder were freshened and sewn together by catgut sutures in two layers. The vagina, which had been separated from the bladder, was then closed around a small drainage tube over which the peritoneum was sewn (see Figure II.).

A second rubber drainage tube was then placed at the point where the bladder rent was sewn up adjacent to the upper end of the tube placed in the vagina; it was brought through a small opening left in the peritoneum of the broad ligament and was then closed over with peritoneum, after the fashion of folding the stomach wall

FIGURE II..
Utero-Vesical-Vaginal Fistula, showing the method of drainage employed. after removal of uterus and upper third of vagina.

FIGURE I..
Utero-Vesical-Vaginal Fistula, showing the uterus emptying into the bladder and the bladder into the vagina.

in Witzel's operation for gastrostomy, and brought out through the mid-line incision in the abdomen (see Figure II.).

The convalescence was uneventful. It was thought that a little urine escaped through the vagina on the second day, but, as the bowels acted at the same time that this escape was observed, it is very doubtful whether any leakage whatever took place, for there were no signs later that the bladder repair had given way.

Both drainage tubes were removed by the third day the patient was out of bed on the twenty-third day after operation.

Cystoscopic examination on August 14, 1922, revealed phosphatic incrustations along the line of the scar in the bladder and a small degree of cystitis. The incrustations were freed by rubbing the cystoscope along the line of the scar and drawn off later by Bigelow's evacuator.

The patient now enjoys remarkably good health and her only inconvenience is slight chronic inflammation of the bladder, which is gradually improving.

Reviews.

DISPENSING BY MEDICAL PRACTITIONERS.

MR. PUNCH'S advice to those about to be married—"Don't!"—might well be applied to medical practitioners contemplating the task of doing their own dispensing. At times, however, it is unavoidable. To those who are compelled to act as pharmacists, Dr. W. G. Sutherland addresses a little volume full of hints and practical advice.[1] Some of the hints are excellent, such as the best method of preparing indestructible labels for stock bottles. Others are less admirable, such as the means of disguising well-known medicines. The advice that a practitioner should learn to judge the quantity of a "drug to be weighed with tolerable accuracy," is bad, as it will lead sooner or later to the elimination of the balance. The book has reached its fifth edition.

[1] "Dispensing Made Easy," by Wm. G. Sutherland, M.B. (Aberd.); Fifth Edition, Revised by A. L. Taylor, Ph.C., M.P.S.; 1922. Bristol: John Wright & Sons, Limited; Foolscap 8vo., pp. viii. + 98, with 70 pages for memoranda and private formulæ. Price: 6s. net.

The Medical Journal of Australia

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The British Medical Association in South Africa.

REFERENCE has been made in these columns in the past to the delicate and dangerous position of the Branches of the British Medical Association in South Africa. The position is one that should be followed closely by all members of this Empire-wide organization, not merely on account of the possible secession of a considerable section from this organization, but also because the Branches in Australia have recently found the means for acquiring autonomy without sacrificing the many advantages attaching to membership of the British Medical Association. It must, of course, be remembered that there is a fundamental difference between the conditions in South Africa and those in Australia. The racial question is a very real one. In the Commonwealth the word British means everything. One of the speakers at the recent South African Medical Congress, in discussing the future of the British Medical Association in that portion of the Empire, stated that the word British meant nothing in connexion with medicine, which was world-wide. It appears, however, that there are many medical practitioners in South Africa who attach great importance to the retention of the present arrangements. Apart from the sentimental link provided by the right to use the proud title "British Medical Association," there is the practical advantage of the weight of a great and ancient institution to which governments and individuals look with respect and deference when matters concerning medicine and hygiene are in question. In the third place the constitution of the British Medical Association is the product of ripe experience and prolonged consideration. It has proved itself to be so admirably adapted to the needs of the medical profession that we may safely predict a much smaller degree of success for any medical organization that is planned on a different scheme.

There exists an independent institution in South Africa, known as the South African Medical Congress, which is closely associated with the Branches of the British Medical Association in South Africa by having an executive, the South African Committee, which at the same time is a federal committee of the South African Branches of the British Medical Association. Last year the South African Medical Congress discussed the situation created by the establishment of a new society, the South African Medical Association, whose programme savoured strongly of trade unionism. The extremist members aimed at complete emancipation from the rule of the British Medical Association. Another, apparently large section of members desired greater autonomy than the parent association in England at that time was able to grant to the overseas Branches and also sought to gain for the medical profession more unity than the Branches had been able to acquire. The remedy appeared to this section to be a South African Medical Association, affiliated with the British Medical Association. In July, 1921, a referendum was taken on this subject. There are between 1,800 and 1,900 medical practitioners in South Africa and less than one half of them took the trouble to register their wishes on this important question. By a small majority it was decided that a South African Medical Association should be formed, provided that arrangements could be made to secure affiliation with the British Medical Association. The Representative Body has determined that if a Branch or a group of Branches desires to absorb other institutions and in the form of a new organization seeks to become affiliated with the British Medical Association, the whole procedure must be effected by the Branch or group of Branches. In South Africa a majority of the members of the medical profession stands outside the British Medical Association. There would therefore seem to be some disinclination on the part of the majority to permit the Branches of the British Medical Association to retain the leading position. It has further been pointed out that the dissolution of the Branches and the formation of a federation to be affiliated with the British Medical Association would neces-

sarily prevent the subsequent formation of one or more Branches of the British Medical Association within the area of the new federation. The advocates of the federation proposals urged on the South African Committee at the Eighteenth Session of the South African Medical Congress, which was held in Johannesburgh from September 18 to 23, 1922, to take immediate steps to give effect to the result of the 1921 referendum by determining the existence of the Branches and by applying to the Council of the British Medical Association for the privilege of federation and affiliation. Prior to the Congress the South African Committee had come to the conclusion that it would be necessary to ascertain from the members of the several Branches of the British Medical Association in South Africa whether a majority was in favour of dissolution and the formation of a new society. The discussion at the business meeting of the Congress is published in the *South African Medical Record* of October 14, 1922. From this debate it is apparent that unanimity and unity do not exist at present. Many members appealed to the members of the Branches of the British Medical Association to purchase peace by agreeing to the new proposals. This appeal and the subsequent resolutions appear to be somewhat irregular. In the first place, the total number of members attending the Congress was considerably under three hundred. In the second place, the business meeting of the Congress was not a democratic meeting and consequently the opinions expressed represent merely those of the majority of a chance conclave. In the third place the members of the Congress have dictated to the members of an independent body the course they should adopt. On the other hand, it seems that the South African Committee is prepared to adopt the instructions of the Congress and to act upon these instructions in its capacity as a recognized committee of the Branches of the British Medical Association in South Africa. The resolutions are to the effect that a referendum is to be taken at once of the members of the Branches on the question whether or not a new association to be affiliated with the British Medical Association should be formed, that the South African Committee appoint a special committee to deal with the taking of the plebiscite and add to this committee one representative not a member of the British Medical Association from each province. Congress also pledged every member of the medical profession to accept the result of a further referendum of the whole profession, provided that not less than 66% of the registered medical practitioners in the South African Union record their votes. The position would become complicated if the referendum of the members of the British Medical Association were to result in a refusal to destroy the Branches and if the second referendum determined to form a new body to be affiliated with the British Medical Association. It is clear that unity is not to be attained in this way and that there is urgent need of the sound constitutional position of the British Medical Association to save the medical profession in the Union from disruption. The lesson to be drawn from this turmoil is that a strong organization based on tradition and sound principles can be relied on to secure unity, while revolutionary methods will inevitably fail. The Branches of the British Medical Association in Australia have shown the way.

THE NATURE OF INFECTIVE DISEASE.

THE student of medicine is taught that infective disease arises as a result of a micro-organism gaining an entry into the body of a person and establishing its race in the tissues of the new host. This simple conception is held to provide a full explanation of the nature of infective diseases, since it recognizes both the infecting agent and the reaction of the infected person. While it may be admitted that in its broadest sense an infection may be defined as the result of the propagation of certain micro-organisms in the animal body leading to the production of symptoms as a direct or an indirect effect of the invasion, it becomes evident on close consideration that the definition is insufficient when applied to an infective disease. The subject of the ætiological study of infective disease has occupied the attention of many investigators during the past third of a century. In the early days of bacteriology the bacterium or protozoon held the field. It was thought that nothing further was needed than the successful entry of a so-called pathogenic organism into the body to produce a definite disease. The

phenomena of immunity and resistance then revealed that, just as it takes two to make a quarrel, so the qualities of the tissues of the person represent important factors in the production of diseases. The discovery that even susceptible animals could harbour in their bodies micro-organisms demonstrably possessed of virulence without the appearance of the signs and symptoms of a particular disease was used by sceptics who wished to deny the truth of the germ theory of disease, as a strong argument for their attacks. Little by little it became evident that the matter is considerably more complicated and that infective disease means more than a mere reaction between an animal and a micro-organism. Dr. L. Paneth has recently written much on this question and has endeavoured to present the facts in a sufficiently comprehensive manner to disclose the real nature of infective diseases. He has examined the four qualities of a disease with a view to determining which factors lend to a particular disease its distinguishing characters. The first aspect is the symptomatic. It is evident that every known symptom may occur in the course of the most diverse diseases. Even combinations of symptoms cannot provide the solution. Cough, fever, sweating at night and wasting are regarded as suggestive of pulmonary tuberculosis, but every clinician knows from experience that this symptom combination may occur in other diseases. Furthermore, a disease may exist without the manifestation of any symptoms. The next aspect is the clinical. According to Dr. Paneth the recognition of a disease on the basis of its clinical manifestation really means that infective diseases are biological processes characterized by signs and symptoms, by definite changes in special organs and tissues of the body, by the clinical course, by the reaction to special methods of treatment, by their epidemiological characters and by their immunological peculiarities. The third aspect is that of morbid anatomy. It is argued that the site and quality of the lesion is not the determining factor of a disease. For example, an inflammatory lesion of the meninges cannot be accepted as a specific disease. It occurs in tuberculous, in meningococcal, in septic and in simple meningitis. Degeneration of the capillary walls, with consequent hæmorrhages, occurs in many processes and the diagnosis cannot be based exclusively on the presence of this form of lesion. The last aspect is the ætiological. Here again there is an obvious objection to the classification of disease on this basis. It is known that pneumococci may give rise to a croupous pneumonia, an endocarditis, a meningitis and ulceration of the cornea.

Modern bacteriological technique has succeeded in disclosing differences of types of many of the known pathogenic bacteria. There is a considerable variation in the virulence of every known pathogenic bacterium. This variation in virulence may be extreme, so that some strains may be incapable of inducing disease, while other strains give rise to rapidly fatal disease, even if present in minute quantities. Some bacteriologists claim that bacteria undergo mutation and variation in virulence. It would certainly seem as though the differentiation of types were the result of an evolutional change. The various types of pneumococci must be derived from a common source and it is eminently probable that the Timothy grass bacillus, the smegma bacillus, the avian tuberculosis bacillus, the turtle bacillus, the bovine tubercle bacillus and the human tubercle bacillus are descended from one common ancestor. On the other hand, it may be argued that the distinguishing features of the several types of pneumococci are artificial, acquired characters which only become apparent when a particular set of circumstances are present. Similarly it might be asserted that the different forms of acid-fast bacilli of the tuberculosis group have merely become adapted to a peculiar environment and that without training they resist a new environment, just as a person fed on one class of food is incapable at first of maintaining his health when ingesting a different kind of diet.

From these and other considerations it may be claimed that neither the bacterium or other form of micro-organism nor its reaction to the invaded organism represent the sole factors in determining the nature of disease. Dr. Paneth would classify infective diseases from the broadest clinical aspect and he would base his conclusions particularly on biological phenomena. It is extremely difficult to find a definition of any disease when the contributory factors are so complex and so numerous. If

progress is to be made in the study of infective disease processes, it is essential that the narrow view of the infecting agent and its general relations to the infected organism must give place to the broader conception of a biological, bio-physical or bio-chemical disturbance of the functional activities of the body. Some of the factors have been studied and can be measured. Others are but imperfectly understood and some have yet to be discovered. In a further article an endeavour will be made to discuss the significance of the known factors in their relation to the infective processes.

RENAL FUNCTION.

PARENCHYMATOUS lesions of the kidney resulting from infective processes or toxic spoiling have been studied pathologically and clinically, not only for the purpose of enabling the physician to understand these forms of nephritis, but also to elucidate the physiology of the secretion of urine. It has been recognized that Nature always provides material and energy in excess for any particular function and never requires an organ to work at high pressure in order to sustain life and health. It has been shown that portions of all vitally necessary secretory organs can be removed experimentally without endangering the life of the animal. When an organ is affected by an infective inflammatory process, only a part is attacked as a rule during the early stages. The spontaneous recovery of a child after scarlet fever with acute parenchymatous nephritis signifies that the inflammatory lesion has involved but a portion of the glomeruli and that the amount of intact tissue after resolution of the infective process is sufficient to support life. Similarly the prognosis of a past pancreatitis will depend on whether the physiologically sound remnant is large enough to carry out the functions of the organ without being worked at high pressure. When the margin of safety is small, the chronic resultant disease is incurable and the length of life will depend to a large extent on the possibility of preventing extra stresses and strains. In order to gain a thorough insight into the relationship between the potential functional activity, the physiological functional activity and the structure of an organ, it is necessary to have regard to Nature's method of conservation. It is now nearly a half of a century ago since Bowditch enunciated the "all or nothing" hypothesis as applied to the cardiac muscle. The stimulation of muscle results either in a maximal contraction or in complete failure. Since this principle was elaborated and recognized, it has been found to apply to other excitable tissue. In regard to the renal epithelium it is supposed that Nature arranges for a period of rest of each part of the parenchyma, so that under ordinary conditions the amount of epithelium in activity at any given moment is just enough to produce the necessary amount of urine. This amount has been estimated to be about one cubic centimetre in each minute. According to the hypothesis each segment in turn works at its highest pressure and then passes into complete inactivity. Under abnormal conditions the period of rest would be less frequent and of shorter duration if a considerable amount of the epithelial tissue is temporarily or permanently excluded; when the sclerotic process of the contracted granular kidney has led to the destruction or elimination of the greater part of the secretory elements, the remnant may be compelled to work at high pressure without any periods of rest. In these circumstances the renal function will fail sooner or later and the symptoms directly and indirectly due to renal inefficiency will lead to embarrassment and eventually to death. It would thus seem that Nature demands for health an intensive output of energy, alternating with measured periods of complete rest. This physiological principle could be applied with advantage to the economic conditions of industrial life.

Dr. V. R. Khanolkar has endeavoured to produce tangible evidence in favour of the application of the "all or nothing" principle in connexion with the kidney.[1] He starts with the assumption that the irregular distribution of the glomerular sclerosis in the contracted granular kidney is the result of an unequal distribution of the poison carried to the kidney by the blood stream. All parts of the kidney do not receive the same amount of blood. There are so many facts that lend support to this hypothesis, that its correctness will scarcely be challenged. Dr. Khanolkar further raises the question whether the several parts of the epithelium have not a differing susceptibility to the poisonous agent. He sets out to collect evidence to establish the first contention. He refers to the work of Elliott and of Cramer, who demonstrated the clearing of secretory cells of the supra-renal bodies in groups after stimulation of the gland. Krogh, also, has shown that in normal organs some capillaries are closed and out of action, while others are open and active. Repeating an experiment of Leonard Hill, he was able to observe in the frog's kidney the sudden or gradual arrest of the circulation through some of the capillaries in the glomeruli, while the blood is seen coursing through other glomerular capillaries. He was less successful in demonstrating the periodic diversion of particulate material injected intravenously when starch granules, milk globules and similar substances were used. The results of the injection of ten or twenty cubic centimetres of a standard suspension of yeast cells into the general circulation was tried. After the lapse of three minutes it was found thta the number of yeast cells present in the individual glomeruli varied from none to fourteen. When the citrate of iron and ammonium was used, particles were seen in the convoluted tubules after from three to five minutes, but none in the capsules of the corresponding glomeruli. Further experiments were conducted with carmine particles. From these it appears that the distribution of the characteristic "worm-eaten" masses in the glomerular capsules was quite irregu-

[1] *The Journal of Pathology and Bacteriology*, October, 1922.

lar. Similarly hæmoglobin was taken up by a few glomeruli and not by others after the injection of laked blood. From these experiments it was found that between 79% and 89% of the glomeruli were resting. After the administration of a diuretic the proportion of resting cells was decreased at times to a considerable extent. The author is inclined to the belief that each glomerulo-tubal system forms the unit. He adduces no evidence in support of a special selective affinity for a toxic substance of one of the units as compared with others. In spite of this investigation and the work of other physiologists, it must be admitted that the mechanism involved in the alternation of the function of the units of a secretory organ is quite unknown. It is unlikely that it is determined entirely by influences acting on the circulatory apparatus. In the case of muscle the accumulation of lactic acid and of other products of metabolism probably acts as a determining factor in the initiation of the resting phase. That a chemical action may be responsible, in part at least, for the temporary cessation of activity of the glomerulotubal unit seems highly probable. The demonstration of such a process would be very difficult.

THE ELECTRO-CARDIOGRAM.

It is somewhat anomalous that while the modern physician employs the electro-cardiograph of Einthoven in the clinical investigation of the heart of his patients, there is still much confusion concerning the significance of the tracings and a want of unity in regard to the interpretations of every one of the peaks in the electro-cardiogram. The difficulty would seem to consist rather in the determination of the point at which the excitation wave is initiated and from which it spreads than in the recognition of the direction and amplitude of the deflection of the galvanometer. The electro-cardiogram will not attain its full value in clinical examination until the physical principles on which it is based, have been exhaustively studied and are thoroughly understood. It must be admitted that the time is not yet ripe for the adoption of a dogmatism in the teaching of this branch of cardiology. Many of the observations in connexion with electro-cardiography have been correlated with clinical manifestations and ingenious hypotheses have been advanced to explain these associations. Unfortunately the majority of the hypotheses fail to provide an acceptable doctrine that embraces all the known facts. In these circumstances it is essential that each plausible hypothesis offered to explain the principles underlying the electro-cardiographic curve should be examined critically in the light of clinical experience and experimental data.

Sir Thomas Lewis, to whom the world owes much for many advances in modern cardiology, published his recent views on the meaning of the more important deflections in 1920. In this monograph he elaborated an hypothesis which he termed the "theory of limited potential differences." In the course of two years some adverse criticism of this teaching has appeared. Sir Thomas Lewis holds that the criticism is the result to some extent of misunderstanding. He has therefore restated his case in the Mellon Lecture in a manner that is unlikely to result in misconception.[1] He starts by explaining that if a strip of muscle be placed between two electrodes and the muscle is stimulated to contract at one end or point of contact, the galvanometer will reflect the difference in potential between the two points of contact. It will be seen that the point stimulated will become relatively negative to the other point and the current will flow in the direction from the former to the latter. If the muscle be immersed in a conducting fluid and the electrodes are placed in the fluid, but not in contact with the muscle, the end of the muscle at which the contraction starts will be found to be relatively negative to the other end and the current will flow from this point. Sir Thomas Lewis points out that the cardiac muscle must be regarded as a strip of muscle immersed in a conducting fluid. In the next place, if the strip of muscle be curved like a hook, so that the stimulation strikes a point some distance from the end, the current will flow from this point to the more distant end. Again, if the curved strip be immersed, there will be an initial current flowing from the free end of the curved limb backwards and a second current from the turn of the curved limb to the other free end. If the curved limb be detached from the main strip of muscle, the end that becomes relatively negative will correspond to the free end of the curved strip and in consequence the current will appear to flow in the reversed direction. The other strip of muscle will become active in a separate process. The author admits that the truth of these assertions cannot be demonstrated by direct experiment, although he adduces evidence in support of each. Translating the phenomena to the conditions of the electro-cardiographic experiment, he shows that many of the apparent paradoxes can be explained. He asks his readers to accept the independent appearance of electromotive force set up in one chamber of the heart and to regard them in the light of limited potentials. In some experiments conducted on the normal amphibian heart he showed that when two contacts were placed on the heart, one at the apex and one at the base, at times the base was activated before the apex and at other times the apex was activated first. The excitation reached the surface of the heart at the central portions of the ventricle and raced simultaneously up to the base and down to the apex. Usually the race was won at the apex. In the electro-cardiogram the primary deflection *R* is said to indicate relative negativity of the contact beyond the apex; a third deflection, *B*, occurring during the later phase, corresponds at the activation of the *bulbus arteriosus* and indicates the relative negativity of the apical contact.

Sir Thomas Lewis also gives a short explanation of the direction of the excitation wave in the mammalian heart and the significance of the initial phase of the electro-cardiogram interpreted in accordance with the limited potential differences and not with the distributed potential differences.

[1] *Archives of Internal Medicine*, September 15, 1922.

Abstracts from Current Medical Literature.

DERMATOLOGY.

Non-Specific Protein Therapy.

EDWARD AHLSWEDE (*Archives of Dermatology and Syphilology*, May, 1922) gives a general review of the situation and results of non-specific protein therapy, especially with relation to skin diseases. Recent works tend to show that many substances, the so-called foreign proteins and their derivatives, may, when injected, cause a leucocytosis and certain changes in the blood. These proteins may be derived from disease germs or they may consist of other animal substances, such as serum, proteoses and milk. Definite improvement and even permanent cure may result in certain diseases. It is supposed that the defensive action of the body can be strengthened and its efficiency augmented by intramuscular injections of proteins. The exact method of action is problematical. Practical experience, however, shows that encouraging results are obtained and that a new and valuable therapeutic weapon has been found which is in many respects equal to specific antitoxin serum treatment. The agent most frequently used is a milk albumin solution which is germ- and toxin-free. Ten cubic centimetres of this solution are injected into the buttock of patients suffering from *sycosis barbæ* or crural eczema. In from six to ten hours the patient has a local reaction around the site of injection and the sycotic area shows more acute signs of inflammation. Another injection is made three or four days later, followed, if necessary, by a third or fourth. If the injections are freely given, the defensive action of the body is so stimulated that a complete cure of the sycosis may be attained. Müller, of Hamburg, with a large experience of many hundreds of cases, reported excellent results in the treatment of *sycosis barbæ*, *impetigo contagiosa*, gonorrhœal complications, soft sore, etc., by this method. In the search for an explanation of the reactive process in the body, he concluded that the immunizing action of the bone marrow was strengthened by the non-specific action of the milk proteins. This is judged by the development of fresh granulated neutrophile leucocytes and the increase of antibodies in the blood serum. The extent of the defensive action may be estimated by the changes at the site of inoculation. It is important that treatment should not be pushed beyond the required point, for the milk proteins act only on the myeloic systems and its immunizing functions and have no direct influence on the foci of infection.

Epidermophyton Infection of the Skin.

JOHN BUTLER (*Northwest Medicine*, October, 1922) publishes an original contribution on epidermophytosis, which he says may be differentiated morphologically and culturally, though not always clinically, from the well-known trichophytosis affections and dermatoses of an eczematous nature. The essential clinical difference between the epidermophytons and the trichophytons is that the former do not attack the hair shafts or follicles and tend to run a chronic course with seasonable intermissions of comparative quiescence. The trichophytons, on the other hand, attack selectively the hair shafts and follicles and run a moderately well-defined course with no tendency to seasonable relapses. The epidermophyton infections are localized in the order of frequency to the feet, hands, crural region and axillæ. The clinical aspects of the disease in any of these regions may vary considerably, although the ætiological factor remains constant. Thus the infection may be clinically indistinguishable from so-called dyshydrosis or a vesicular, intertriginous or tylotic eczema. Six clinical varieties of the disease are recognized—macular, papular, vesicular, macerated and intertriginous, hyperkeratotic and nail involvement or onychia. The primary lesion on the foot consists of deep-seated vesicles with a tendency to grouping and in practically all instances are to be found situated between the fourth and fifth toes. It is owing to the close proximity of the fourth and fifth toes that the roof of the vesicle becomes ruptured and maceration of the skin occurs. Several applications are mentioned in the treatment of this condition, including Whitfield's ointment, silver nitrate, iodine, etc..

Dermatitis Caused by Oil of Citronella.

GUY LANE (*Archives of Dermatology and Syphilology*, May, 1922) reports dermatitis from the application of oil of citronella. The essential feature of this particular case was the inflammatory reaction about each follicle in the region to which the oil had been applied. Redness and elevation were very noticeable at the periphery of the areas, while the central parts, with their closely aggregated follicular elevations, were very rough. The eruption appeared a few hours after the application of the oil. Other members of the patient's family were not affected. The eruption subsided on the application of calamine lotion and the epidermis returned to normal in a few days.

Scleroderma Following Trauma.

ARONSTAM (*Urologic and Cutaneous Review*, February, 1922) reports an instance of scleroderma following trauma in a girl aged fifteen years. Seven months before presenting herself at the hospital she had fallen and struck her arm. Beyond a slight ecchymosis, which had cleared up in two weeks, there had been nothing abnormal. Two months after the primary injury a sclerotic patch appeared at the seat of the trauma and rapidly extended upwards toward the middle third of the upper arm and downwards to within a short distance of the metacarpus.

Pathological Changes in the Elastic Tissues of the Skin.

A. KISSMEYER AND CARL WITH (*British Journal of Dermatology and Syphilis*, June, 1922) have studied the subject of pathological changes in the elastic tissues of the skin, from both the clinical and microscopical aspects. Detailed findings are grouped under five headings: (*i.*) degeneration of newly formed elastic tissue in scars, (*ii.*) degeneration of newly-formed elastic tissue in transplantation patches, (*iii.*) elastic degeneration in granulation tissue, (*iv.*) *pseudo-xanthoma elasticum*, (*v.*) yellowish colour of skin from various causes. As a result of their observations the authors conclude that clinically different forms are not characterized by different histological appearances. There is a quantitive increase in the elastin and an irregularity in thickness, the fibres appear to be more easily broken and there appears to be a tendency in some instances for the fibres to curl up into balls. In all instances there appears to be a narrow belt left underneath the epidermis. In *pseudo-xanthoma elasticum* the collagen bundles appear to form small, tumour-like masses, characterized by the curling up and necrosis of the elastic fibres.

Herpes Zoster as a Primary Ascending Neuritis.

DOUGLAS MONTGOMERY (*Archives of Dermatology and Syphilology*, December, 1921) brings forward further evidence in support of the theory that *herpes zoster* is a specific microbic infection. Although it is not known to be transmitted from person to person, it occurs in communities and in groups of patients. It has also an almost regular, sequential course, an invasion, a status of maintenance and a decrease, which take place in a limited period, and its onset and maintenance are often accompanied by fever. Furthermore, one attack appears to grant immunity, as a second attack is rare. The characteristic neural lesion, on which since Barensprung's day the eruption has been thought to depend, is inflammatory in origin. There is evidence that attacks of *herpes zoster* have appeared after an injury to the skin.

Blood Pressure Observations in Psoriasis, Lichen Planus and Lupus Erythematosus.

J. N. ROUSSEL (*Archives of Dermatology and Syphilology*, March, 1922) calls attention to the results of his observations on psoriasis, *lichen planus* and *lupus erythematosus*. In the instances of psoriasis which have come under his notice, he has found that the blood pressure has been uniformly low and that it tends to fall as the disease progresses. He found that by raising the pressure fifteen or twenty millimetres of mercury without any local application the eruption disappeared completely in some cases. The same phenomena occurred when the blood pressure was raised by pituitary extract.

RADIOLOGY.

Radio-Therapy in Malignant Disease.

G. F. PFAHLER (*New York State Journal of Medicine*, July, 1922) deals with radio-therapy in malignant disease. Malignant cells after radiation and before their ultimate disappearance pass through at least five successive phases. Firstly, a latent phase occurs, varying from six to fifteen days, when no change is noted. Secondly, monstrous cellular characters occur with cell enlargement, atypical mitoses, etc.. Thirdly, keratinization of disseminated, total or atypical character takes place. Fourthly, disintegration and phagocytosis of the degenerating cells may be discovered and, fifthly, there is formation of connective tissue scars free from neoplastic masses. Basal-celled epitheliomata respond readily to radiation, especially if first destroyed by electro-coagulation. Electro-coagulation is very necessary before treating epithelioma involving cartilage: When bone is involved, surgery followed by radio-therapy is indicated. The author uses a full erythema dose to the area through a two-millimetre aluminium filter and where previous electro-coagulation has been used, a single dose is sufficient. When electro-coagulation is not used, two to six erythema doses are given to the tumour and to a small surrounding area. In carcinoma of the lip a full erythema dose is given through six millimetres of aluminium and similar dosage is applied to the glandular areas; the complete dosage is repeated in three weeks. In mouth, tongue and laryngeal conditions radiation is difficult, but may give relief. In breast cancer preliminary and post-operative treatment is recommended. The operation should be performed within three weeks of the radiation and the post-operative radiation should be given within two weeks afterwards and should cover the whole operation area. No further dosage is necessary in the absence of signs of recurrence. The author in these cases uses a full erythema dose through six millimetres of aluminium at forty centimetres distance through three ports of entry. High voltage therapy is recommended in uterine carcinoma. Sarcoma yields rapidly to radiation and osteo-sarcoma treated thus gives better results than by surgery.

Non-Opaque Foreign Bodies in Air Passages.

WILLIAM F. MANGES (*American Journal of Roentgenology*, May, 1922) writes on a series of fifty-six non-opaque foreign bodies in the air passages seen in Dr. Chevalier Jackson's Clinic since 1920. Foreign bodies in a bronchus show an acute obstructive emphysema on the affected side. In skiagrams there is an increased transparency of the affected lung; there is depression and partial fixation of the diaphragm on the affected side and displacement of the heart and mediastinal structures away from the affected side. There is also increased excursion of the diaphragm of the unaffected side, due to compensatory emphysema. The author considers the diaphragmatic signs of the greatest importance. The above mentioned signs are present in proportion to the size of respiratory obstruction. Skiagrams should be taken at extreme inspiration and extreme expiration. The signs may vary from day to day, but remain abnormal as long as the foreign body is present. Secretions may collect below the foreign body and give the condition known as "drowned lung." Infection of a congested area will lead to abscess. Atelectasis was noted in two patients and the lung rapidly recovered on the removal of the foreign body. In atelectasis the heart is displaced to the affected side, there is upward displacement of the diaphragm and increased density of the involved area. The exposures are made instantaneously at one metre distance and duplitized films and double screens are used.

The Small Intestine.

R. W. MILLS (*American Journal of Roentgenology*, April, 1922) writes on the X-ray evidence of certain abnormal states of the small intestine, embodying an hypothesis of the transmission of gastro-intestinal tension. He calls attention to the small amount of work done in the radiography of the small intestine outside of the well-known conditions of obstruction and jejunal ulcer. His observations are based upon a series of six thousand cases over a period of ten years and in 10% of these some abnormal lesion was found. He notes a certain form of small intestine in conditions of colonic stasis and obstruction and suggests a recoil or relative stasis in the small intestine caused by this blockage ahead. He supports this hypothesis by much collateral evidence obtained in the course of his research. The form, position, tone and motility of the small intestine conform to the type of the individual (*habitus*) as is generally found in gastro-intestinal work. Obstruction causes proximal dilatation and constant back pressure on a sphincter causes the sphincter to become divulsed and incompetent. In this way the recoil may be passed back through the ileo-caecal valve and even through the pylorus.

Radiography of the Kidney.

MM. DELHERM AND LAQUERRIERE (*La Presse Médicale*, February 15, 1922) describe the Carelli-Sordelli method of examination of the kidney after the production of a perirenal emphysema. By this method a contrast is produced between the kidney (and suprarenal gland) and the surrounding gas-inflated tissues. The procedure is similar to that employed in pneumo-peritoneum and no elaborate apparatus is necessary. Either oxygen or carbon dioxide is used; the latter absorbs much more quickly than the former. The gas is passed through a warm water bottle to which a manometer is attached. An ordinary lumbar puncture needle is passed perpendicularly to the skin surface just above the transverse process of the second lumbar vertebra. This point can be located by palpating the spinous processes of the first and second lumbar vertebræ and then passing laterally for three centimetres. The needle is passed into the perirenal tissues about one centimetre anterior to the transverse process and the gas can then be slowly passed in while the patient breathes deeply. The manometer should show oscillations corresponding to the respiration rate and, unless these are noted, it is a sign that the needle is not deep enough. The inflation can be watched on the fluoroscopic screen and it will usually be sufficient to inject three hundred to four hundred cubic centimetres of gas. Plates are taken in the usual manner and the patient quickly recovers. The only discomfort occasionally noted by the authors has been some pain in the testicles which quickly vanishes. The authors have found this method of great use in cases of renal tuberculosis.

Chronic Appendicitis.

GUY LAROCHE, P. BRODIN AND G. RONNEUX (*La Presse Médicale*, April 8, 1922) contribute an article on chronic appendicitis. After considering the number of ailments originating in the right iliac fossa, they consider the usual clinical signs and various points in differential diagnosis of these conditions and then pass on to the possible assistance of radiography in diagnosis. The authors have only had indifferent success in demonstrating the appendix shadow, although they have used a buttermilk meal as used in America and they do not rely on the appendix shadow and its position as shown in skiagrams. They attach great importance to the presence of a tenderness localized over the site of the appendix in all positions of the patient and by palpation under the screen they are able to demonstrate any adherance of the caecum or appendix.

Ulcer and Cancer of the Duodenum.

A. W. CRANE (*American Journal of Roentgenology*, February, 1922) describes a case of primary malignant disease and a case of ulcer of the duodenum beyond the bulb. This condition is extremely rare. The stomach showed the appearances usually associated with the presence of pyloric stenosis, yet the pylorus was demonstrated on the plate as being wide and gaping and the meal could be seen passing through into the duodenum. At the end of twenty-four hours there was a large stomach residue and the meal could be seen scattered through the small intestine. In the patient suffering from malignant disease the duodenum was not greatly dilated, but in the patient suffering from ulcer it was dilated in its second part. Further, in each case the ampulla of Vater could be demonstrateed. Gastric analysis showed a mild degree of hyperacidity. The diagnoses were only established at laparotomy, although probable duodenal obstruction had been reported by the radiologist.

British Medical Association News.

SCIENTIFIC.

A MEETING of the South Australian Branch of the British Medical Association was held in the Lister Hall, Hindmarsh Square, Adelaide, on August 31, 1922, DR. T. G. WILSON, the President, in the chair.

Myasthenia Gravis.

DR. D'ARCY COWAN presented a girl suffering from *myasthenia gravis*. He was treating her with thymus gland. The condition appeared to be improving.

Anterior Polar Cataract.

DR. J. B. GUNSON exhibited a mother and her child, both of whom were suffering from anterior polar cataract.

Syphilitic Necrosis of the Frontal Bone.

DR. H. S. NEWLAND, C.B.E., D.S.O., presented a woman who had come under treatment for specific necrosis of bone in the frontal region. The raw area left after the removal of the sequestra had been covered by a large skin flap from the parietal region. The bare parietal wound had been covered by a graft taken from the arm. The graft comprised the full thickness of the skin. All the areas had healed well.

Epithelioma of the Larynx.

DR. NEWLAND also showed a man on whom he had operated two years previously for epithelioma of the larynx. Several operations had been carried out subsequently for the removal of metastatic growths in the lymphatic glands. A tracheotomy tube had been worn for two years with little discomfort or other ill-effects.

Epithelioma of the Pinna.

DR. NEWLAND'S third patient was a man who had undergone surgical treatment for an epithelioma of the right ear and subsequent plastic operation to remedy the defect. The result was good.

Skiagrams.

DR. R. H. MARTEN exhibited a series of skiagrams to illustrate fractures of both *ossa calcis* of a man who had fallen a distance of four and a half metres (eighteen feet).

Oxygen Valve.

DR. GILBERT BROWN demonstrated a new oxygen fine adjustment valve which, when attached to an oxygen cylinder, regulated the flow of oxygen.

Basal Metabolic Rates.

DR. R. THOROLD GRANT read a paper entitled "Basal Metabolic Rates in Graves's Disease" (see page 697).

DR. W. RAY, in opening the discussion, said that his remarks were not based on any practical experience. He thought that the temperature of the room would be a larger factor to be taken into consideration when an estimation was being made. He asked why it was held that there was need for an elaborate estimation of the metabolic rate, if lowering of the pulse rate were regarded as an indication of improvement in Graves's disease. He had noted that X-ray treatment had been employed without benefit in two of Dr. Grant's patients. Did Dr. Grant wish them to infer from this that X-ray treatment was of no value in the treatment of Graves's disease?

DR. H. M. JAY asked whether a patient could have Graves's disease without enlargement of the thyreoid gland. He thought that the estimation of the basal metabolic rate would assist in the diagnosis of the condition.

DR. H. CAREW NOTT stated that X-ray treatment was usually tried for six months. If there was no improvement at the end of this time, the patient was handed to the surgeon. He presumed that the type of disease in the two patients was that which was resistant to X-ray treatment.

DR. H. S. NEWLAND asked Dr. Grant how much of the thyreoid gland was removed by Mr. Dunhill.

DR. GLEN H. BURNELL wished to know in which other diseases the basal metabolic rate was raised.

DR. MALCOLM SCOTT stated that after a sufficient amount of the thyreoid gland had been removed, the pulse rate became slowed. He would like to know whether the basal metabolic rate was raised in the same way. He referred to the increased difficulty in operating after X-ray treatment had been applied.

DR. R. H. MARTEN asked Dr. Grant how the iodine had been given.

DR. F. M. WILLCOX inquired whether sections of the thyreoid gland had been examined after X-ray therapy had been applied. He would be interested to learn of the microscopical appearances of the gland under these conditions.

In his reply, DR. THOROLD GRANT stated that the basal metabolic rate was raised in pernicious anæmia, in leuchæmia, in enteric and all other febrile conditions, in diabetes and in cardiac decompensation. Iodine had been given in 0.9 mil doses of tincture of the French Pharmacopœia in half a tumber full of milk. Sections of the thyreoid gland after irradiation with X-rays revealed a distinct fibrosis. Mr. Dunhill had stated that the operation was much more difficult after this treatment had been applied, because the planes of severance were obliterated.

A MEETING of the South Australian Branch of the British Medical Association was held in the Lister Hall, Hindmarsh Square, Adelaide, on October 27, 1922, DR. T. G. WILSON, the President, in the chair.

Anæsthetic Apparatus.

DR. H. F. SHORNEY showed an intra-tracheal anæsthetic apparatus designed by Dr. Lidwill. He demonstrated the various methods of giving the anæsthetic, *viâ* the nose into the naso-pharynx by means of two rubber tubes attached to a Y-shaped metal tube which was strapped to the patient's forehead, *viâ* the mouth by means of a tough, silk-covered catheter into the trachea. The air was blown over the ether by means of a motor pump. The apparatus had one disadvantage in that it was necessary to keep it quite steady, as fluid ether was liable to be blown direct into the patient's respiratory passages if the surface of the ether were ruffled. He also showed how the apparatus could be used for sucking fluids, such as blood or pus, from a cavity.

For the intra-tracheal method a gum elastic or linen thread catheter was passed to the bifurcation of the trachea by the direct method.

A mercury manometer was also mounted on the base chamber for intra-tracheal use and could be adjusted so that the excess would escape at fifteen, twenty or thirty millimetres respectively. The water bath was heated by electricity and a lamp resistance could be put in the circuit to maintain any desired temperature. The water bath was fitted with a thermometer.

The apparatus was then set in motion and the suction apparatus demonstrated, coloured water from a bowl being used. Advantage might be taken of this exhaust action in operations for ovarian cyst, hydatid cyst and cystotomy, as well as in throat and nose operations.

The special advantages of this apparatus were (*i.*) the impossibility of delivering liquid ether to the patient, (*ii.*) accurate volumetric delivery was insured, as the volume of air per minute, the pressure of the air and the quantity of ether were easily controlled, (*iii.*) protection of the pump from contamination, (*iv.*) double filtering of the air and (*v.*) constant lubrication of the pump.

Two anæsthesia records were shown in which the systolic and diastolic blood pressure, the pulse and respira-

tion were charted every five minutes. The operations comprised the removal of shrapnel from the cervical spinal canal, the removal of half the lower jaw, part of the cheek, the hard and soft palate, with block dissection of the cervical glands and sterno-mastoid muscle.

DR. GILBERT BROWN, on behalf of DR. H. S. NEWLAND, demonstrated a modified Connell ether apparatus. The machine was a hospital model, mounted on a wheeled trolley. The lower part consisted of a cupboard containing the motor and pressure pump. The motor could be heard only very faintly when the cupboard doors were closed. The pressure pump was fitted for suction and blowing. The air was taken in through a filter lightly packed with gauze. The filter protected the pump from becoming contaminated with aspirated material in case the bottle containing the aspirated fluid was allowed to become too full. The air passed through the pump under a positive pressure. This pressure was used to maintain constant lubrication with liquid paraffin. A sight feed drip was provided for adjustment. The vapourizing unit was mounted on top of the cupboard. It was made of aluminium and consisted of an ether chamber superimposed on a vapourizing chamber enclosed in a water bath. The air from the blower passed to the bottom of the vapourizing chamber and this pipe was fitted with a pressure regulating tap. This chamber was lightly packed with gauze, which served the double purpose of breaking up the air stream and filtering it. Ether was allowed to drop into the vapourizing chamber. Control was effected by an adjustable needle valve, the rate of flow being determined by counting the drops per minute through a glass sight feed.

The resultant mixture of air and ether then passed through a flow gauge which had a glass barrel graduated in litres per minute. A metal parachute served as an indicator. The ether-air mixture was then delivered to the patient by a rubber tube which might be connected in several ways. For the intra-pharyngeal method it could be delivered by the mouth, the double airway devised by the speaker being used; it could be administered by the nose, either a single large rubber tube, about No. 30 French, or two rubber tubes attached to the ram's-horn nasal tube, being employed.

Cataract and Glaucoma.

DR. H. F. SHORNEY demonstrated a method for the differential diagnosis of cataract and glaucoma. He showed a small piece of looking glass with a small hole three millimetres in diameter in the centre. The patient was placed in front of a good light. The practitioner looking through this hole in the case of glaucoma would see a red colour, whilst in cataract an opacity became visible when the light was thrown on to the eye. Dr. Shorney laid stress on the importance of the general practitioner differentiating these two conditions.

The Diploscope.

DR. H. M. JAY showed the diploscope of Dr. Remy. He explained that it had been constructed from a description contained in an article by Dr. Delage in *The British Journal of Ophthalmology*. The latter had claimed that the advantage of the instrument over others similar in principle was that it could be used in the treatment as well as the diagnosis of ocular imbalance. By its use it was said that the fusion faculty could be developed in patients of all ages with strabismus, even when there was a considerable difference between the refractive error of the eyes.

Dr. Jay had not been using the instrument long enough to warrant his passing any opinion on this statement.

Ossification of the Eye.

DR. A. W. HILL exhibited two specimens of eyes that had undergone ossification. The first had been excised from a man, aged forty-five years, who had gradually lost the sight of his eye during the course of seven months. He had suffered very little pain. There was no history of an injury. When the patient was admitted to the Adelaide Hospital it was found that the globe of the eye was shrunken, the cornea opaque and the vision absent. The eye had been excised. The centre of the organ consisted in necrotic tissue, while the periphery contained bone.

The second specimen was the left eye of a man of thirty-five years who had been struck in the eye thirteen years previously by a piece of steel. The fragment had not been removed. The man had had some sight up to four years before and had been able to carry out his work. There had been no pain up to this time, but subsequently he had suffered pain and the sight had faded completely. The conjunctiva was injected and the cornea hazy. The iris was inactive and adherent to the lens. The lens was opaque. The anterior chamber was shallow and the intra-ocular tension much reduced. The eye had been excised. A bone tumour had been discovered in the eye after removal.

Dr. Hill read a description of ossification of the eye from Parson's text-book.

He also exhibited several artificial eyes fashioned to illustrate various pathological conditions. These models had been made in Melbourne and had been lent to Dr. Hill by Messrs. Laubman and Pank.

Irreducible Dislocation of the Lower Jaw.

DR. H. S. NEWLAND, C.B.E., D.S.O., showed a woman who frequently dislocated her lower jaw whilst yawning. Usually the dislocation was easily reduced. The last time, however, it had been impossible to reduce it. Under an anæsthetic it had also proved impossible. An incision had been made over the point on the right side and the condyle had been levered into place. Fourteen days had elapsed since the operation and the woman had had very little pain and had good movement of her jaw. Before operation the usual signs were present, the lower jaw was very prominent and there was a dimple in front of the right ear.

Lesion of the Cauda Equina.

DR. D. R. W. COWAN showed a man, aged twenty-one years, who had complained of a pain in the region of the buttocks and down the back of the thighs in 1918. The pain had been of a dull, aching character and had not inconvenienced him greatly. For the last six months he had been quite free of pain. In 1920 he had begun to have difficulty in micturition and loss of control of the bowel. These symptoms had continued up to the present time. He had not had complete retention of urine; micturition had been accomplished by straining, but frequently the bowel had acted at the same time. Sexual power had not been lost. There had been no loss of power in the lower limbs and, except for the trouble with the bladder and bowel, he had felt quite well.

On examination the patient was found to be a well set up young man in no distress. There was no evident deformity of the spine, no swelling, no rigidity and no tenderness. There was anæsthesia to all forms of sensation over an area comprising the external genitals, the anus and perineum and a saddle-shaped area over the buttocks, extending down the back of both thighs. This area corresponded with the cutaneous distribution of the second, third, fourth and fifth sacral nerve roots. The superficial and internal anal reflexes were absent; the anus presented a typical yawning appearance on removal of the examining finger. The bulbo-cavernosus reflex was absent. There was no motor paralysis of the lower limbs. The knee jerks were present and equal, but the ankle jerks could not be elicited.

Radiographic examination showed a definite deformity of the fifth lumbar vertebra. The blood serum and the cerebro-spinal fluid had not yielded a reaction to the Wassermann test. The test for complement fixation for hydatid disease had also failed to yield a reaction. The cerebro-spinal fluid was under slightly increased pressure, but there was no other abnormality. The von Pirquet test gave a well-marked reaction. The urine was normal. The diagnosis was a lesion of the *cauda equina* involving the second, third, fourth and fifth sacral segments. It was probably due to compression caused by caries of the lumbar vertebra. There was at present no evidence of active spinal disease. Operative measures seemed to offer a reasonable chance of relieving the condition.

Ophthalmoplegia.

DR. J. R. MUIRHEAD presented a married woman, aged forty-nine years, who had been operated on by a surgeon on November 29, 1921, on the right side for trigeminal neuralgia. The right eye had been seen to be injected at the close of the operation and two catgut epidermic sutures had been inserted, closing the lids. The sutures had been removed on the fifth day. It had then been observed that the eye was immobile.

Dr. Muirhead first saw her in consultation on December 27, 1921, when passive œdema of the upper lid with ptosis had supervened. Slight chemosis and injection of the conjunctiva had been present and the cornea was denuded of epithelium, except for a vascularized ring at the periphery about 0.5 millimetre in width. *Ophthalmoplegia interna et externa* were complete, except for a small excursion of the globe downwards and outwards, due to some movement of the superior oblique muscle. The eye and lips were insensitive and pain, lachrymation and photophobia were absent. There was no lagophthalmos and no exophthalmos. There was no œdema over the right mastoid process. The left external rectus muscle was functioning normally. Absolute alcohol was applied regularly to the right ulcerated cornea and saline lotion was instilled gently. Two small infected deep ulcers on the pupillary area were superimposed on the main area, but failed to penetrate. The cornea recovered completely in a few weeks, though it remained anæsthetic and the muscle paralysis persisted. Meanwhile, pain and sensation had recurred in the distribution of the other branches. The surgeon therefore re-operated on April 4, 1922. Since the second operation there had been no suffering, but a fresh corneal ulceration had supervened, which had healed rapidly with the aid of magnesium sulphate solution (12%), as also did a subsequent ulcer accompanied by sub-conjunctival hæmorrhage caused by collision with a door. Galvanism by the episcleral method had been employed to the ocular muscles at intervals and some movement in all directions had been regained. The ptosis was only intermittent. In the lower and outer quadrant of the cornea was a macula. The pupil was still completely dilated, but not completely immobile and vision was $^{6}/_{24}$ with a low minus sphere. Diplopia was still present.

Corneal Fistula.

DR. MUIRHEAD'S second patient was a man, aged twenty-two years, who had been first seen on September 1, 1922. The condition from which he was suffering had been diagnosed as interstitial keratitis, which had commenced at the corneal periphery and had progressed in spite of local and constitutional treatment. Perforation had taken place and a central corneal fistula had formed which had failed to heal in response to curetting and the insertion of a snip of conjunctiva. A bridge of conjunctiva free from sub-conjunctival tissue had been drawn across the cornea in a vertical direction at a later date. The dense resulting leuchoma was attacked by ionization twice a week for three months. The patient had obtained moderately good vision in dull illumination. The lens capsule had escaped injury. A slender synechia from the pupillary margin of the iris would be dealt with during iridectomy, followed by, if necessary, tatooing of the central leuchoma.

Burns of the Eye.

DR. MUIRHEAD presented a woman, aged twenty-three years, who had been sent to him by a medical practitioner on November 15, 1921, on account of scalds or caustic burns of the lids and forehead on the right side of the face and also of both eyes, the result of an explosion of a tin of grease remover four days before. The burns on the right lids were of the second and third degrees and great œdema was present. *Lotio plumbi* had inadvertently been applied. The cornea had been examined with difficulty; it had been found to be ulcerated severely and very dirty. Hypopyon had been present. At a subsequent examination the conjunctival sac had been defined, persistent symblepharon had been avoided and the canaliculi had been freed from early scarring. Chloretone oil had been freely used. The resulting corneal opacity was dense and blepharospasm extreme, though canthotomy had been performed twice. A solution of neutral ammonium tartrate (10%) had been also applied. Isolated trichiasis in the upper lid had been dealt with by electrolysis. The eye was comfortable and had a sightly and active pupil. Slight cloudiness and superficial vascularity of the cornea remain, but vision was reduced to counting as a result of corneal plumbism.

Buphthalmos.

DR. MUIRHEAD showed a boy, aged twelve years, with buphthalmos of the left eye; the condition appeared to be stationary. The right eye had been removed previously for an unknown cause.

Malignant Neurocytoma.

DR. MUIRHEAD then showed two pathological specimens.

The first was a malignant neurocytoma invading the sclerotic and occupying the whole of the vitreous chamber from a child aged two and a half years. When the child had first been seen, the tension had been lowered and the eye appeared to be microphthalmic, with a melanotic cornea and an opaque lens. Subsequently the tension had risen and enucleation had been undertaken. The specimen had been examined by Dr. Barlow.

X-ray therapy was applied to the orbital tissues by Dr. S. Verco. Recurrence, however, had taken place in the orbit, which was exenterated by Dr. Morgan. This patient had suffered from three attacks of proptosis with great œdema of the lids, which had rendered the diagnosis difficult.

Melanotic Sarcoma of the Chorioid.

The second specimen was a typical mushroom-shaped melanotic sarcoma of the chorioid springing from the outer side of the right macula in a man aged sixty. The patient had first presented himself on account of an attack of acute glaucoma without prodromata. The lens had been completely opaque. After posterior sclerotomy had been performed and normal vitreous contents extruded, he had refused enucleation and had absented himself for three months until the eye had again become glaucomatous. It had been enucleated and examined by Dr. Barlow. This patient had struck his face and brow on the right side heavily on the gunwale of a boat four years previously, while on active service; he had considered that the eye had never been the same since.

Epithelioma of the Soft Palate.

DR. H. M. JAY showed a man, fifty-four years old, who had complained of a sore mouth for ten months. When the patient had first been seen, the disease, which had manifested itself as a series of raised areas varying from three to ten millimetres in diameter, had been limited to the anterior pillar of the fauces on the right side and the adjacent palate. During the next week or two this portion had appeared to become almost normal, whilst the disease process had spread towards the middle line, leaving only a slightly thickened area. There had been no ulceration and the condition had been considered to be syphilitic or tuberculous. No response had been obtained to the Wassermann test on two occasions; by microscopical examination the epitheliomatous nature of the disease had been demonstrated. No glands were palpable.

Syphilitic Ulceration of the Palate.

DR. JAY showed a woman, aged thirty-eight years, who had extensive ulceration of the palate and fauces. This proved to be syphilitic. The process of healing was going on rapidly under anti-syphilitic treatment.

Chronic Suppurative Otitis.

DR. H. M. JAY then read a paper on "Chronic Suppurative Otitis" (see page 704).

DR. EDGAR BROWN urged that strenuous treatment was most essential. He advised his patients to instill drops of hydrogen peroxide every hour and, if the discharge did

not clear up in a few days, he used drops of 10% "Argyrol" after drying out the ear. He congratulated Dr. Jay on his paper.

Neuro-Cytoma of the Retina.

PROFESSOR J. B. CLELAND, on behalf of DR. BULL and himself, exhibited the following specimens of pathological conditions of the eye from the Pathological Museum at the Adelaide Hospital.

The patient, a male aged fifty-nine years, had been under the care of Dr. Morgan, to whom they were indebted for the specimen and clinical notes. Dr. Morgan had first seen the patient on July 8, 1922, with a history of loss of sight in the right eye for nine months. Three years before the eye had nearly been gouged out. For six months he had been under treatment apparently for detachment of the retina. When first seen he had had acute glaucoma. It had been impossible to obtain a view of the fundus. The left eye had been normal. He had been treated with eserine sulphate without benefit. A diagnosis had then been made of an intra-ocular tumour and the eye had been enucleated on July 17.

The tumour was found to be in the neighbourhood of the entrance of the optic nerve. It formed a whitish, nodular mass about nine millimetres in vertical and eight millimetres in transverse diameter, projecting into the posterior chamber, whose contents were coagulated and colloid looking. The hyaloid membrane was very prominent and contained extravasated blood, especially in its outer edges. This extravasated blood extended over the surface of the tumour and along the retina on each side for about five millimetres. The sclerotic was apparently not involved either macroscopically nor microscopically. The nutrition of the lens had apparently been disturbed, as the lens was loose in its capsule, somewhat shrunken and opaque.

In the sections a mass of cells was seen bound together by a delicate reticulum. The cells were large, indefinitely outlined with granular protoplasm and possessed large, elongated polymorphous nuclei with prominent nucleoli. Mitoses were not infrequent. The scattered vascular spaces were thin-walled, lined only by a single layer of endothelium. The tumour was considered to be derived from the neuro-epithelium of the retina. The tumour cell did not appear to be of connective tissue origin.

The second specimen was the eye of a man, aged twenty-nine years, who had been under the care of Dr. Shorney at the Adelaide Hospital. Clinical details were not available. The tumour measured about nine millimetres by five millimetres. It was whitish, circumscribed and rested on the optic disc, to which it was attached at one point of the periphery; it projected into the posterior chamber. On section numerous large polymorphous, sometimes elongated nuclei were seen embedded in a matrix (the fused protoplasm of the cells), but no definite cell outlines. This was occasionally traversed by vessels with hyaline walls. There was an indefinite tendency for the nuclei to arrange themselves in rosettes. Some small vessels showed proliferation of their endothelial cells, as in some endotheliomata of the *dura mater*. Occasionally in small spaces there were masses of inspissated, calcifying material representing incorporated and altered vitreous humour. In places there were groups of small round cells resembling those of the granular layer of the retina, held to be included retinal remnants; one small mass of pigment was seen. The appearances suggested a neuroma. The cells did not resemble those of a connective tissue tumour.

Melanotic Sarcoma of the Ciliary Body.

The third specimen was a tumour forming a convex projecting swelling in the posterior chamber of about fifteen millimetres in lateral diameter, twelve millimetres in antero-posterior diameter and ten millimetres in depth. On section it was seen in part to be deeply pigmented, in part pale. In the microscopical sections large spindle-shaped cells were seen, some irregular, many free from pigment, but some with melanin. The vessels were thin-lined, having merely an endothelial lining. Dr. Edgar Brown had removed the eye in 1921. Recently the patient had suffered from abdominal discomfort and on examination in October, 1922, he had been found to have a much enlarged and nodular liver, evidently from secondary deposits. The diagnosis of melanotic sarcoma of the ciliary body had been made.

Professor Cleland presented another melanotic sarcoma of the orbital tissues. The tissues were infiltrated with pigmented areas.

Squamous Epithelioma of the Nictitating Membrane.

PROFESSOR CLELAND showed a specimen of a squamous epithelioma of the nictitating membrane of the eye of a horse. Neoplasms of similar character were not unusual in Australia, being probably attributable to dust, grass seeds and flies.

Other Ophthalmic Specimens.

PROFESSOR CLELAND also presented a glaucomatous eye which had been removed by Dr. Hill from a male, aged fifty-six years, a specimen of a detached retina with inflammatory exudate and staphyloma of the cornea.

NOMINATIONS AND ELECTIONS.

THE undermentioned had been elected as a member of the New South Wales Branch of the British Medical Association:

MACPHERSON, SIR JOHN, C.B., M.B., C.M., 1882, M.D., 1896 (Univ. Edin.), F.R.C.P. (Edin.), 1891, 229, Macquarie Street, Sydney.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on December 4, 1922.

The degree of Master of Surgery (Ch.M.) was conferred upon MISS UNA L. FIELDING and upon MESSRS. K. E. HENNESSY and A. E. PATERSON *in absentia* and the degree of B.Sc. upon MR. T. W. MURPHY *in absentia*.

DR. ÆNEAS MCDONELL, of Brisbane, wrote, presenting the Medal won by DR. PETER BANCROFT in 1888, the first Medallist in the Faculty of Medicine at the University. It was decided that the gift be received and a letter of thanks be sent to Dr. McDonell. The Medal is to be placed in the Senate Room at the University.

DR. P. A. ASH, the editor of *The Dental Review* and a lecturer in the Faculty of Dentistry, was nominated, on the recommendation of the Dean of the Faculty of Dentistry, as the University's representative to a conference of Dental Societies to be held in Sydney in December, 1923.

On the motion of PROFESSOR A. E. MILLS, Dean of the Faculty of Medicine, it was decided that ASSOCIATE-PROFESSOR JOHN HUNTER be appointed Professor of Anatomy at this University from March 1, 1923.

Professor Mills stated that Associate-Professor Hunter graduated in 1920 and on the recommendation of Professor Wilson was immediately appointed Associate-Professor of Anatomy on account of his remarkable aptitude for teaching and research work. Having held the position for a year, he was granted leave of absence to enable him to pursue further studies and researches under Professor Elliott Smith at the University of London and under Professor Wilson at the University of Cambridge. He had received most favourable reports from both these gentlemen.

The Senate considered applications which had been received for the vacant Chair of Zoology, together with reports of a committee appointed to consider the applications received in London as well as the local committee appointed by the Senate. ACTING-PROFESSOR L. HARRISON was appointed to the Chair.

Post-Graduate Work.

POST-GRADUATE COURSE IN SYDNEY.

THE following is the syllabus of the Second Post-Graduate Course in Medicine of the Sydney University Extension Board. A preliminary notice of the course was published in THE MEDICAL JOURNAL OF AUSTRALIA of November 11, 1922, page 571. The date of application for tickets for the course has been extended from December 15 to December 31, 1922.

Monday, January 8, 1923.

9.30 a.m.—DR. H. J. RITCHIE: "Indications and Contra-Indications for the Use of Digitalis in Cardiac Disease," at the Sydney Hospital.

11 a.m.—DR. H. J. RITCHIE AND DR. A. W. HOLMES À COURT: Demonstrations of Illustrative Cases at the Sydney Hospital.

2 p.m.—PROFESSOR D. A. WELSH: "The Distinction Between Arterio-Sclerosis and Other Reactions of the Arteries, with a Demonstration of the Clinico-Pathological Complex that is Characteristic of Each Type of Arterial Reaction," in the Pathological Lecture Room of the Medical School.

Tuesday, January 9, 1923.

9.30 a.m.—DR. SINCLAIR GILLIES: "The Diagnosis of Early Pulmonary Tuberculosis," at the Royal Prince Alfred Hospital.

11 a.m.—PROFESSOR A. E. MILLS: "Glycosuria and its Treatment," at the Royal Prince Alfred Hospital.

2 p.m.—DR. J. MORTON: Operations in the "Albert 1" Theatre at the Royal Prince Alfred Hospital.

DR. R. L. DAVIES: Operations in the "Victoria 1" Theatre at the Royal Prince Alfred Hospital.

2.30 p.m.—DR. R. GORDON CRAIG: Operations and Cystoscopic Examinations, in the "Alfred Roberts" Theatre of the Royal Prince Alfred Hospital.

DR. A. S. WALKER AND DR. H. T. C. MACCULLOCH: Medical Out-Patients, Clinics at the Royal Prince Alfred Hospital.

DR. B. T. EDYE: Surgical Out-Patients Clinics at the Royal Prince Alfred Hospital.

DR. L. G. TEECE, DR. D. J. GLISSAN AND DR. G. C. BYRNE: Orthopædic Out-Patients Clinics at the Royal Prince Alfred Hospital.

Wednesday, January 10, 1923.

9.30 a.m.—DR. J. C. WINDEYER: "Some Aspects of Pre-Maternity Work," at the Royal Hospital for Women, Paddington.

DR. H. C. E. DONOVAN: "The Intercurrent Diseases of Pregnancy," with Demonstration of Cases, at the Women's Hospital, Crown Street.

DR. E. LUDOWICI: "The Toxæmias of Pregnancy," Demonstration at the Women's Hospital, Crown Street.

DR. A. J. GIBSON: "Abdominal Palpation and Pelvimetry," Demonstration at the Women's Hospital, Crown Street.

10 a.m.—DR. J. C. WINDEYER, DR. P. L. HIPSLEY AND DR. H. A. RIDLER: Demonstrations in Pre-Maternity Work, at the Royal Hospital for Women, Paddington.

11 a.m.—DR. J. HARRIS AND DR. CONSTANCE D'ARCY: Demonstrations and Ward Clinics in Obstetrics, at the Royal Hospital for Women, Paddington.

DR. S. H. MACCULLOCH: "The Diagnosis and Treatment of Occipito-Posterior Positions," Demonstration of Obstetric Cases at the Women's Hospital, Crown Street.

2 p.m.—Notice will be given of operations to be performed.

8 p.m.—DR. A. L. DAWSON: "The Treatment of Syphilis," at the Venereal Diseases Clinic, Royal Prince Alfred Hospital.

DR. L. E. ELLIS: "The Treatment of Gonorrhœa," at the Venereal Diseases Clinic at the Royal Prince Alfred Hospital.

Thursday, January 11, 1923.

9.30 a.m.—DR. MARGARET HARPER: "Infant Feeding," at the Royal Alexandra Hospital for Children.

10.30 a.m.—DR. J. MCDONALD GILL: "Rheumatic Heart Affections in Children," at the Royal Alexandra Hospital for Children.

11.30 a.m.—DR. R. B. WADE: "Abdominal Emergencies in Children," at the Royal Alexandra Hospital for Children.

2 p.m.—DR. R. B. WADE: Operations in the Main Theatre of the Royal Alexandra Hospital for Children.

DR. A. W. DUNN: Demonstrations of Enucleations of Tonsils, in the Lower Theatre at the Royal Alexandra Hospital for Children.

DR. J. MCDONALD GILL: Demonstrations of Medical Cases, in the "Hunter-Baillie" Ward of the Royal Alexandra Hospital for Children.

3 p.m.—DR. A. W. CAMPBELL: Demonstrations of Neurological Cases in the "Yaralla" Ward of the Royal Alexandra Hospital for Children.

3.30 p.m.—DR. W. VICKERS AND DR. H. G. HUMPHRIES: Orthopædic Cases, in the Massage Department of the Royal Alexandra Hospital for Children.

DR. E. TEMPLE SMITH: Lecture-Demonstration on Squint in Children, in the "Commercial Travellers'" Ward of the Royal Alexandra Hospital for Children.

Friday, January 12, 1923.

9.30 a.m.—PROFESSOR H. G. CHAPMAN: "Physiological Aspects of Respiration in Relation to Clinical Work," in the Physiological Lecture Room at the Medical School.

11 a.m.—DR. S. A. SMITH: "Some Diseases Caused by Dust: Their Diagnosis and Incidence," in the Physiological Lecture Room at the Medical School.

2 p.m.—DR. H. S. MARSH AND DR. C. WARREN: Operations in the Main Theatre of the Sydney Hospital.

DR. J. MCDONALD GILL: Ward Clinics in Ward Five of the Sydney Hospital.

DR. H. BULLOCK: Surgical Out-Patients Clinics at the Sydney Hospital.

DR. A. W. HOLMES À COURT: Medical Out-Patients Clinics at the Sydney Hospital.

DR. R. I. FURBER AND DR. J. CRAWFORD ROBERTSON: Gynæcological Out-Patients Clinics at the Sydney Hospital.

3 p.m.—DR. H. BULLOCK: Operations in the "Want" Theatre at the Sydney Hospital.

7.15 p.m.—DR. N. M. GIBSON: "The Complications of Gonorrhœa," in the Venereal Diseases Clinic of the Royal Prince Alfred Hospital.

Monday, January 15, 1923.

9.30 a.m.—DR. C. B. BLACKBURN: "Nervous Mechanism of Functional Disorders of the Digestion, with Special Reference to Hypertonic and Hypotonic Dyspepsia and Nervous Colitis," at the Royal Prince Alfred Hospital.

10.30 a.m.—DR. H. R. SEAR: Demonstration of X-Ray Findings in Functional Diseases of the Stomach, at the Royal Prince Alfred Hospital.

11 a.m.—DR. J. MORTON: "Surgery of the Gall-Bladder and Duct," at the Royal Prince Alfred Hospital.

11.45 a.m.—DR. J. L. MCKELVEY: "Surgery of the Stomach," at the Royal Prince Alfred Hospital.

2 p.m.—DR. H. J. MARKS: "Diagnosis and Treatment of Acute Nasal Conditions met with in General Practice," at the Royal Prince Alfred Hospital.

PROFESSOR F. P. SANDES: Operations in the "Albert 1" Theatre at the Royal Prince Alfred Hospital.

DR. ST. JOHN W. DANSEY: Operations in the "Victoria 1" Theatre at the Royal Prince Alfred Hospital.

DR. SINCLAIR GILLIES AND DR. E. W. FAIRFAX: Medical Ward Clinics at the Royal Prince Alfred Hospital.

DR. R. GORDON CRAIG AND DR. J. MORTON: Surgical Ward Clinics at the Royal Prince Alfred Hospital.

DR. H. J. CLAYTON AND DR. M. C. LIDWILL: Medical Out-Patients Clinics at the Royal Prince Alfred Hospital.

DR. J. COLVIN STORY: Surgical Out-Patients Clinics at the Royal Prince Alfred Hospital.

DR. G. R. HALLORAN, DR. G. A. VERGE AND DR. J. W. WOODBURN: Ear, Nose and Throat Clinics at the Royal Prince Alfred Hospital.

DR. F. A. MAGUIRE: Gynæcological Out-Patients Clinics at the Royal Prince Alfred Hospital.

DR. T. S. KIRKLAND: "Anatomy of the Nose: Accessory Sinuses with their Diseases; Demonstrations of Result of Radical Mastoid Operations; Two Cases of Meningitis Cured by Operation," at the Sydney Hospital.

DR. G. BELL: Operations in the Main Theatre of the Sydney Hospital.

DR. C. BOWKER: Operations in the "Want" Theatre of the Sydney Hospital.
DR. C. E. CORLETTE: Demonstrations of Fractures in Ward One of the Sydney Hospital.
DR. J. McDONALD GILL: Ward Clinics in Ward Five of the Sydney Hospital.
DR. H. H. MARSHALL: Ward Clinics in Ward Three of the Sydney Hospital.
DR. L. DUNLOP: Medical Out-Patients Clinics at the Sydney Hospital.
DR. A. W. RAMSAY SHARP: Surgical Out-Patients Clinics at the Sydney Hospital.

4 p.m.—DR. F. W. HALL: Ward Clinics in Ward Three of the Sydney Hospital.

7.15 p.m.—DR. J. COOPER BOOTH: "The Treatment of Gonorrhœa," at the Venereal Diseases Clinic at the Royal Prince Alfred Hospital.

Tuesday, January 16, 1923.

9.30 a.m.—DR. FOURNESS BARRINGTON: "Pitfalls of Gynæcology," at the Royal Prince Alfred Hospital.

11 a.m.—DR. R. L. DAVIES: "Obstetrical Emergencies," at the Royal Prince Alfred Hospital.

2 p.m.—DR. J. C. HALLIDAY: "Some Points in Ophthalmology Useful in General Practice," with demonstration of cases, at the Royal Prince Alfred Hospital.
DR. R. H. JONES AND DR. C. SHEPHERD: Demonstrations of Eye Cases in the Wards and Theatre of the Eye Department of the Sydney Hospital, Sir John Young's Crescent, Woolloomooloo.
DR. J. MORTON: Operations in the "Albert 1" Theatre of the Royal Prince Alfred Hospital.
DR. R. L. DAVIES: Operations in the "Victoria 1" Theatre of the Royal Prince Alfred Hospital.
DR. A. ASPINALL: Operations in the "Want" Theatre at the Sydney Hospital.
DR. H. S. STACY: Operations in the Main Theatre at the Sydney Hospital.
DR. A. W. HOLMES À COURT: Medical Out-Patients Clinics at the Sydney Hospital.
DR. H. BULLOCK: Surgical Out-Patients Clinics at the Sydney Hospital.
DR. R. I. FURBER AND DR. J. CRAWFORD ROBERTSON: Gynæcological Out-Patients Clinics at the Sydney Hospital.

2.30 p.m.—DR. R. GORDON CRAIG: Operations and Cystoscopic Examinations in the "Alfred Roberts" Theatre of the Royal Prince Alfred Hospital.
DR. A. S. WALKER AND DR. H. T. C. MACCULLOCH: Medical Out-Patients Clinics at the Royal Prince Alfred Hospital.
DR. B. T. EDYE: Surgical Out-Patients Clinics at the Royal Prince Alfred Hospital.
DR. L. G. TEECE, DR. D. J. GLISSAN AND DR. G. C. BYRNE: Orthopædic Out-Patients Clinics at the Royal Prince Alfred Hospital.

3 p.m.—DR. R. G. WADDY: "Ocular Therapeutics for Every-Day Practice," at the Royal Prince Alfred Hospital.
DR. R. BRIDGE: Operations in the "Want" Theatre at the Sydney Hospital.

4 p.m.—DR. E. A. BREARLEY: "Cataract and Trachoma," at the Royal Prince Alfred Hospital.

Wednesday, January 17, 1923.

9.30 a.m.—DR. J. McDONALD GILL: Demonstration of Medical Cases in the "Hunter-Baillie" Ward at the Royal Alexandra Hospital for Children.
DR. E. S. LITTLEJOHN: Demonstration of Medical Cases in the "Yaralla" Ward at the Royal Alexandra Hospital for Children.
DR. E. H. M. STEPHEN: Demonstration of Medical Cases in the Shelters at the Royal Alexandra Hospital for Children.

10.30 a.m.—DR. R. B. WADE: Demonstration of Surgical Cases in the "Commercial Travellers'" Ward at the Royal Alexandra Hospital for Children.
DR. P. L. HIPSLEY: Demonstration of Surgical Cases in the "Faithfull" Ward at the Royal Alexandra Hospital for Children.
DR. H. G. HUMPHRIES: Demonstration of Surgical Cases in the Upper "Todman" Ward at the Royal Alexandra Hospital for Children.

11.30 a.m.—DR. N. PAUL: Demonstration of Skin Diseases in the Upper "Todman" Ward at the Royal Alexandra Hospital for Children.
DR. A. W. DUNN: "Common Ear Affections in Children," in the Lower "Todman" Ward at the Royal Alexandra Hospital for Children.

2 p.m.—Notice will be given of operations to be performed.

Thursday, January 18, 1923.

9.30 a.m.—DR. R. SCOT SKIRVING: "Medical Aspects of Life Insurance," at the Sydney Hospital.

11 a.m.—SIR HERBERT L. MAITLAND: "Surgical Aspects of Renal Disease," at the Sydney Hospital.

2 p.m.—DR. E. H. MOLESWORTH: "Eczemas, Chronic Solar Dermatitis," at the Royal Prince Alfred Hospital.
DR. L. P. JOHNSTON: "Common Skin Diseases in General Practice," at the Sydney Hospital.

3.30 p.m.—"X-Ray Demonstrations: Fractures, Dislocations and Diseases of Bones and Joints, Their Technique and Interpretation," at the Royal Prince Alfred Hospital.
DR. J. G. EDWARDS: "Demonstrations in Radiography of the Bones and Joints and of the Technique Employed," at the Sydney Hospital.
DR. A. H. TEBBUTT: Demonstrations in Clinical Pathology at the Royal Prince Alfred Hospital.
DR. W. KEITH INGLIS: Demonstration in Pathological Work at the Sydney Hospital.

Friday, January 19, 1923.

9.15 a.m.—PROFESSOR F. P. SANDES: "Movement, Posture and Tone," at the Royal Prince Alfred Hospital.

9.45 a.m.—DR. H. R. G. POATE: Demonstrations of Lesions of the Knee Joint, at the Royal Prince Alfred Hospital.

10.15 a.m.—DR. L. G. TEECE: Demonstrations of Lesions of the Lower Limb Below the Knee, at the Royal Prince Alfred Hospital.

10.45 a.m.—DR. D. J. GLISSAN: Demonstration of Lesions of the Elbow Joint and of the Limb Distal to it, at the Royal Prince Alfred Hospital.

11.30 a.m.—DR. R. B. WADE: Demonstration of Lesions of the Hip Joint, in the Massage Department of the Royal Alexandra Hospital for Children.

12 noon.—DR. W. VICKERS: Demonstration of Lesions of the Shoulder Joint, in the Massage Department of the Royal Alexandra Hospital for Children.

2.30 p.m.—DR. R. J. MILLARD: "Infectious Diseases," at the Coast Hospital.

Dinner.

A dinner will be held at Usher's Hotel in the evening of January 8, 1923.

Correspondence.

PUERPERAL INFECTION.

SIR: In his letter of October 24, 1922, Dr. Chenhall quotes Arnold De Lea: "The mortality after manual removal of the placenta is still very high, owing to direct inoculation of the placental site." The implication is that the inoculation takes place at the time of the manual removal. In my opinion, this teaching should not go unchallenged.

A retained adherent placenta is frequently the result of chronic inflammatory reaction due to pathogenic organisms in the endometrium. The most perfect asepsis on the part of the accoucheur cannot guarantee that the patient will not develope a purulent endometritis and perhaps a general infection.

The quotation from Victor Bonney is amusing: "Prevention is more to be relied upon than cure." This is anything but cheerful to quote to a fellow practitioner whose patient is suffering from puerperal sepsis. The "application of surgical war principles and practice to obstetrics"; I do not agree that they are either "practically impossible" or "inefficient."

For many years past I have treated cases of puerperal sepsis almost always on the lines advocated by Knyvett

Gordon, of Monsall Fever Hospital, Manchester ("Treatment of Puerperal Sepsis by Active Disinfection of the Uterus," *The Journal of Obstetrics and Gynæcology*, January, 1907) and have never had reason to regret my procedure.

Dr. Gordon swabs out the uterus with pure "Izol"; I usually use pure "Lysol." I quote the following from Dr. Gordon's paper: "The whole endometrium down to the muscle is removed with a sharp curette" . . . and after douching . . . "the whole raw surface is swabbed over carefully with a Playfair's robe tipped with gauze soaked in undiluted medical 'Izol' fluid."

Yours, etc.,

W. J. BEVERIDGE, M.D., L.M. (Rotunda).

347, Fitzgerald Street, North Perth,
Western Australia, November 27, 1922.

Books Received.

A HANDBOOK OF AURAL SURGERY FOR STUDENTS AND PRACTITIONERS, by William Wilson, M.D., B.Sc.; 1922. Manchester: Sherratt & Hughes; Crown 8vo., pp. x. + 336. Price: 15s. net.

A LABORATORY HANDBOOK OF BIO-CHEMISTRY, by P. C. Raiment, B.A. (Oxon.), M.R.C.S., L.R.C.P., and G. L. Peskett, B.A. (Oxon.); 1922. London: Edward Arnold & Company; Crown 8vo., pp. 102. Price: 5s. net.

ANÆSTHETICS IN PRACTICE AND THEORY, by J. Blomfield, O.B.E., M.D. (Cantab.); 1922. London: William Heinemann (Medical Books), Limited; Royal 8vo., pp. xii. + 424, with 48 figures. Price: 25s. net.

LAWSON TAIT: HIS LIFE AND WORK, by W. J. Stewart McKay, M.B., M.Ch., B.Sc.; 1922. London: Baillière, Tindall & Cox; Royal 8vo., pp. xii. + 578, with 34 plates. Price: 25s. net.

OPHTHALMIC SURGERY, by Major V. Nesfield, Major, I.M.S. (Retired), F.R.C.S. (England); 1922. London: H. K. Lewis & Company, Limited; Demy 8vo., pp. xii. + 172, with 22 illustrations. Price: 9s. net.

PHYSIOLOGY FOR DENTAL STUDENTS, by A. G. Curzon-Miller, B.Sc., L.M.S.S.A. (Lond.), F.C.S.; 1922. London: Edward Arnold & Company; Demy 8vo., pp. viii. + 206, with 81 figures. Price: 10s. 6d. net.

PRACTICAL HANDBOOK ON THE DISEASES OF CHILDREN, by Bernard Myers, C.M.G., M.C. (Ed.), M.R.C.P. (Lond.); 1922. London: H. K. Lewis & Company, Limited; Demy 8vo., pp. xvi. + 548, with 61 illustrations. Price: 21s. net.

Medical Appointments.

DR. J. S. A. ROGERS (B.M.A.) has been appointed Superintendent of the Hospital for the Insane at Beechworth, Victoria, during the absence on leave on DR. R. G. NAYLOR (B.M.A.).

* * * *

DR. M. B. JOHNSON (B.M.A.) has been appointed to act at the Port of Albany, Western Australia, as Medical Inspector of Seamen under the *Navigation Act, 1912-1920*.

* * * *

DR. M. R. FINLAYSON (B.M.A.) and DR. A. C. HOUEN (B.M.A.) have been appointed as a Medical Referee and as Certifying Surgeon respectively, under the *Workmen's Compensation Act, 1916*, within the County of Yancowinna, New South Wales.

* * * *

DR. V. R. WILSON (B.M.A.) has been appointed Government Medical Officer at Esk and Medical Referee under *The Workers' Compensation Acts, 1916 to 1921*, Queensland.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii..

AUSTIN HOSPITAL, HEIDELBERG, VICTORIA: Two Honorary Physicians.

LADY BOWEN LYING-IN HOSPITAL, BRISBANE: Honorary Visiting Physician.

PERTH HOSPITAL, WESTERN AUSTRALIA: Resident Pathologist.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Societies' Dispensary Friendly Societies Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phœnix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B. M. A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

DEC. 19.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
DEC. 22.—Queensland Branch, B.M.A.: Council.
DEC. 28.—Brisbane Hospital for Sick Children: Clinical Meeting.
JAN. 1.—Victorian Branch, B.M.A.: Annual Subscriptions Due.
JAN. 9.—New South Wales Branch, B.M.A.: Council (Quarterly).
JAN. 11.—Victorian Branch, B.M.A.: Council.
JAN. 16.—New South Wales Branch, B.M.A.: Ethics Committee; Executive and Finance Committee.
JAN. 24.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
JAN. 27.—Northern District Medical Association, New South Wales: Glen Innes.
JAN. 31.—Victorian Branch, B.M.A.: Council.
JAN. 31.—Western Medical Association, New South Wales: Orange.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

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